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The Journal of Neurology and Psychopathology

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Original Papers.

TUMOUR OF THE BRAIN, ASSOCIATED WITH DIFFUSE SOFTENING AND TURBID CEREBRO-SPINAL FLUID: REPORT OF A CASE.*

By

HARRY L. PARKER, Rochester, Minn.

The diagnosis of cerebral disease is seldom easily accomplished especially if the course of events is swift and there are numerous unexpected complications. In a given case the choice of opinion may fluctuate between cerebral tumour, softening due to thrombosis of a vessel and even some type of inflammatory disease. Cardinal signs, which we hopefully look for, may be altogether lacking and such signs as are present may be grossly misinterpreted and wrongly evaluated. The case reported here not only illustrates these difficulties but carries considerable significance in regard to tumours of the brain and their influence on the surrounding tissues.

HISTORY OF CASE.

A farmer, age fifty-eight, came to The Mayo Clinic on March 28, 1928, because of difficulty of speech and weakness of the right hand and arm. He had been well apparently up to two weeks before, when his family had noticed that he frequently stopped in the middle of a sentence as if seeking the correct word. This had become more noticeable at the end of a week when he was scarcely able to talk; he could only mumble a word or two. He seemed, however, to understand what was said and he carried on his usual work up to three or four days previous to examination. It was then noticed that the right side of his face had become flattened and that saliva leaked out of the right corner of his mouth. He had had some difficulty in buttoning his clothes with his right hand. All his movements had become slower and initiative seemed to desert him. There was no complaint of headache or of vomiting.

The patient weighed about 195 pounds and looked as if he had done considerable hard work during his life. The peripheral arteries were obviously sclerosed, but the blood pressure was 125 systolic and 80 diastolic. Co-operation was practically absent in any form of examination requiring mental effort. He could perform very simple commands with

* Submitted for publication May 14, 1929.

From the Section on Neurology, The Mayo Clinic, Rochester, Minnesota.

his left hand but could not speak. There was flaccid paralysis of the right side, complete in the lower portion of the right side of the face and in the right arm, but slight movement still remained in the right leg. All sensory tests were impossible because of aphasia and mental hebetude. The Babinski sign was present on plantar stimulation of the right foot and all tendon reflexes were increased on the right side. The pupils reacted normally; there was not sufficient co-operation to estimate the visual fields, but examination of the fundus of the eye disclosed moderate sclerosis of the retinal arteries only. At no time was there any œdema of the optic discs. X-ray examination of the skull did not show anything abnormal, but diffuse dilatation of the aortic arch was shown. The specific gravity of 500 c.c. of urine was 1016; the reaction was acid, and albumin and sugar were absent. Microscopic examination did not show pus cells or casts. The hæmoglobin was 77 per cent. with 4,900,000 erythrocytes per c.mm., and the leucocyte count was 8,800. Later leucocyte counts did not show further increase.

He was ambulant during the first two days of his visit to the clinic but in the latter part of the second day the weakness of the right hand and arm progressed fairly rapidly, spread to the rest of that side of the body, and within twelve hours complete right hemiplegia had developed. He was sent to the hospital for further observation and care. The temperature, at first normal, rapidly climbed during the first few hours to 102° F. where it remained with minor fluctuations during the eight days he was under observation. The pulse remained about 90 during the same period. Mental dulness progressed rapidly into stupor and the patient lay inert except for periods of being roused for examination when he persisted in rubbing the left frontoparietal region as if it were the seat of severe pain. Percussion in that area caused him to grimace and groan. Repeated examination of chest and abdomen did not show anything unusual except that toward the end signs of bronchopneumonia appeared. Spinal puncture was performed on the day of admission to the hospital and the fluid was under 210 c.mm. of water pressure. It was opaque, greenish yellow and looked frankly purulent. Under the microscope it was found to be opaque from an enormous number of polymorphonuclear leucocytes. There were 1,600 of these per c.mm., also 107 small lymphocytes. The Nonne test was positive but quantitative estimation of protein was not made. There was prompt response in the fluid pressure to compression of the jugular veins. The Wassermann test was negative. A second spinal puncture the next day produced fluid similar in appearance but the polymorphonuclear leucocyte count was less, being 853. The small lymphocyte count, however, was greater, being 256, and there were 31 large lymphocytes. Smears of the two specimens of fluid were stained and examined for organisms but none was found and all the cultures made on various media remained sterile.

The original diagnosis was thrombosis of the left middle cerebral artery with cerebral softening. The cause of the thrombosis was considered to be cerebral arteriosclerosis. Discovery later of the turbid cerebrospinal fluid and its persistence noted in the second puncture on the following day suggested an unusual pathological process. Doubt was cast on the first opinion and it was hard to understand the significance of so turbid a fluid. In the attempt to clear up the diagnosis and, if possible, to relieve the patient of some of his symptoms, surgical exploration of the brain was advised.

On April 3, 1928, the skull was opened through a left subtemporal decompression which was enlarged to about 6 cm. After the dura was opened and reflected, the brain round the central and lateral fissures in the region of the decompression opening was found to be sunken and the convolutions were flattened and softened. There was no evidence of increased intracranial pressure. The meninges seemed normal to the naked eye and no inflammatory process could be seen. A diagnosis was made of cerebral softening due to thrombosis of the left middle cerebral artery, and nothing further was done beyond closing the wound in the usual manner. The stupor became more profound, and death occurred about twenty-four hours after the operation.

PATHOLOGICAL EXAMINATION.

At necropsy the entire brain was removed complete. Before it was put aside for further hardening it was examined grossly whereupon it could be readily seen that the left temporal lobe was enlarged to almost twice its normal size (fig. 1). On palpation the enlarged lobe was found to have undergone extensive softening, which had also extended over the left frontal and parietal lobes about 3 or 4 cm. in front of and behind the central fissure. This softening did not, however, extend very high on the surface of the hemisphere and did not reach its superior margin.

FIG. 1.—Base of brain showing enlargement of left temporal lobe due to tumour and softening. The relationship of the left middle cerebral artery to the tumour in the anterior pole of temporal lobe is shown.

After the brain had been hardened in 40 per cent. formaldehyde for several weeks coronal sections were made. In the anterior third of the left temporal lobe was found a small tumour about 5 cm. in diameter. It filled the tip of the temporal lobe, leaving a small margin of œdematous, softened brain substance. At one point inferiorly it reached the surface of the lobe (fig. 2). It was vascular and hæmorrhagic, of a dirty greyish-brown colour, and many necrotic areas and gelatinous cystic foci could be seen. It was friable and crumbled easily. Tracing it backward in coronal sections it apparently reached the anterior extremity of the inferior horn of the left lateral ventricle. At this point both brain and tumour had undergone hæmorrhagic softening and

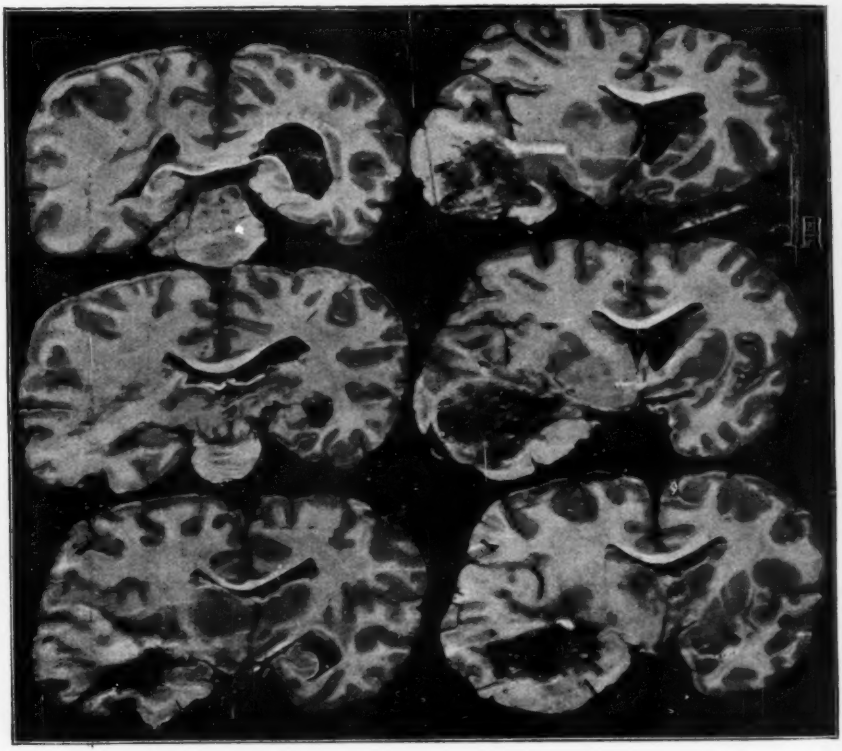

FIG. 2.—A series of coronal sections cut through the brain posterior to the tip of the temporal lobe. The tumour in the left temporal lobe cannot be distinguished grossly from the area of hæmorrhagic infarction and necrosis associated with it. An area of softening may be traced posteriorly to the juncture of the inferior and posterior horns of the left lateral ventricle. The lateral ventricle is compressed on the left and dilated on the right.

the degenerated tumour and brain tissue merged into one another imperceptibly. This red softened area which surrounded the inferior horn of the left lateral ventricle was the centre of a wide zone of white softening. The boundaries of this white softened area could be traced easily both by the naked eye and by palpation. Posteriorly it extended the whole length of the temporal lobe and occupied the major portion of the lobe. Above, it extended into both parietal and frontal lobes as high as the level of the corpus callosum and medially it reached the lateral surface of the thalamus and involved the internal capsule (fig. 3). Anteriorly in the frontal lobe it did not extend further than the anterior end of the caudate nucleus and posteriorly in the parietal lobe it reached the juncture of the posterior and inferior horn of the left lateral ventricle. At the periphery the white softened area was sharply marked off from normal brain tissue by a raised edge and was mainly subcortical, but in a few places it reached the surface and involved the cortical grey substance and surface of the brain. The centre of the area of infarction was red, hæmorrhagic and necrotic and surrounded the cavity of the inferior horn of the lateral ventricle. Anteriorly it blended with the degenerating tumour. The body and inferior

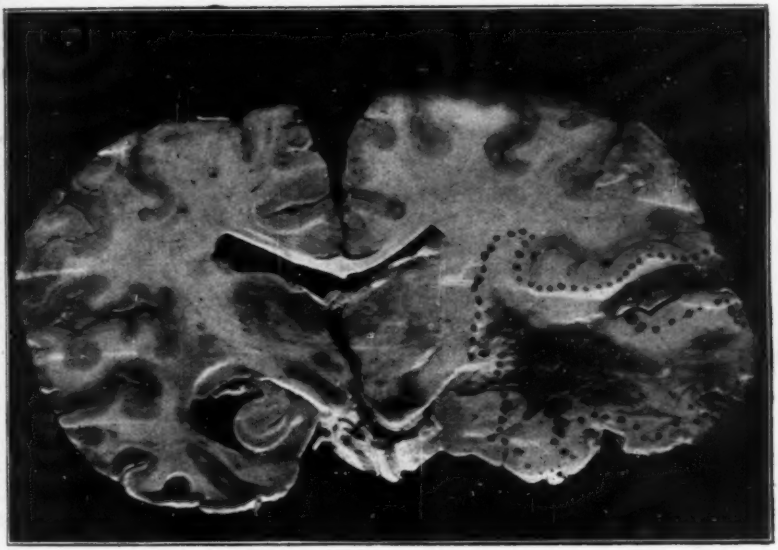

FIG. 3.—Coronal section of brain about the middle of the third ventricle. An area of softening in left hemisphere is mapped out by inspection and palpation and its boundaries dotted with India ink. A peripheral zone of white softening and red hæmorrhagic necrotic centre surrounding the inferior horn of left lateral ventricle is shown. Tumour tissue cannot be found at this level of the section.

horn of the left lateral ventricle were compressed, resulting in a compensatory dilatation of the cavities on the opposite side and distortion of the outline of the brain. The left middle cerebral artery was examined carefully for thrombi but in the stem and in the larger branches none could be found. It was manifest, however, that the middle cerebral artery lying deep in the lateral fissure between the temporal and frontal lobes of the brain could easily become compressed by the tumour in the anterior portion of the temporal lobe (fig. 1). The cerebral blood vessels grossly were only moderately sclerotic and changes could not be seen in the meninges suggestive of a previous inflammation.

Blocks of tissue were taken for microscopic examination from : (1) the tumour ; (2) the softened area both in the region of the inferior horn and in the peripheral margin of softening ; (3) the cortex of the temporal lobe in the vicinity of the tumour and from other more remote portions of the brain including the attached meninges, and (4) the blood vessels, including the left middle cerebral and left internal carotid. The tissues so selected were stained with hæmalum and eosin, Van Gieson's stain, Cajal's gold sublimate method and Orlando's modification of Bielschowski's silver impregnation stain. Sections of the tumour were the first to be examined and they showed it to consist of rapidly growing cells. It also contained numerous areas of necrosis, hæmorrhage and degeneration. The general architecture varied according to the degree of these changes. Sections from round the inferior horn showed a necrotic hæmorrhagic mass of tissue that could not be identified because of the destruction of its component elements. Further forward cystic areas could be found and masses of cells with degeneration in the centre, forming so-called 'rosettes' and 'palisades.' In areas of cell growth as yet not degenerated a polymorphic cell-picture could be seen. The cells were of all shapes and sizes and the relative amount of the nucleus and cytoplasms varied enormously. Some cells were round and others oval ; the most common cell was spindle-shaped or pyriform and with Cajal's gold sublimate method of staining it could be identified as a bipolar spongioblast. There were also multipolar cells resembling immature astrocytes. A conspicuous feature in many areas was the appearance of large multinucleated so-called giant cells. Some of these had undergone hyalin degeneration and the outline of the cell was indistinct. Many mitotic figures could be seen in all stages of formation (fig. 4). Many of the larger blood vessels of the tumour showed hyaline changes in their walls ; in the smaller there was proliferation of the adventitia and intima often leading to closure of the lumen. Thrombosed vessels were therefore common and were surrounded by areas of necrosis. Many of the vessels also had ruptured and spilled their contents so that the resultant picture included many areas of hæmorrhagic necrosis. Altogether, the tumour was a rapidly growing one, composed of cells extremely varied in shape and size and containing many giant cells and mitotic figures. It was mostly necrotic and hæmorrhagic, and was a fairly typical example of a spongioblastoma multiforme (fig. 4).

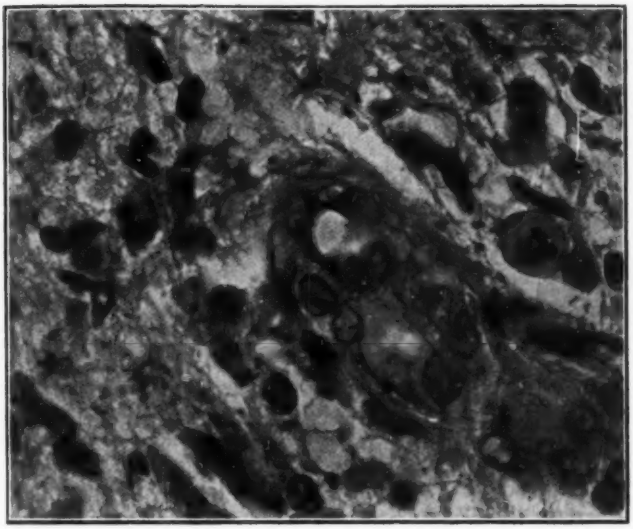

FIG. 4.—Variety in shapes and sizes of cells is obvious. Multinucleated giant cell in centre of field and mitotic figure to the right and slightly above are shown. A diagnosis of spongioblastoma multiforme was made (x 700).

In the portion of the growth where it surrounded the inferior horn of the lateral ventricle it was impossible even microscopically to tell where tumour ended and necrotic brain tissue began. Tissues from this region consisted of homogeneous stroma strewn with black granules of blood pigment, many 'gitter' cells and faint shadows of degenerated glia and nerve cells. Further, posteriorly sections were taken to include the wall of the inferior horn and its ventricular surface, in areas apparently not completely degenerated and free from tumour. The ependymal lining here was completely denuded and the subependymal tissues were œdematous and contained many cells chiefly of the scavenger type. The adventitial spaces of many of the vessels were packed with 'gitter' cells which with Scharlach R stain were shown to be loaded with fat. Many polymorphonuclear leucocytes were free in the tissues, or round the blood vessels, and in a considerable number of places were gathered into relatively large dense masses almost suggesting abscess-formation. These masses were just under the surface of the ventricular wall and in a few places had reached it and had made contact with the cavity of the inferior horn. The area of white softening outside the central hæmorrhagic necrotic portion showed the usual picture of cerebral softening and it seemed to be relatively recent. The tissues were œdematous, there was a multiplication of glial cells of various shapes and sizes, and the nerve cells had become shrunken and

distorted and stained poorly. 'Gitter' cells in abundance were found free in the tissues or clustered round the blood vessels and in their adventitial spaces. At the periphery where the softened and normal areas joined there was an even greater increase in neuroglial cells, but the infarction being fairly recent fibrillar tissue had not as yet been formed. Sections of cortex covered by the meninges, taken from the area of tumour and softened brain, showed nothing more than relatively mild infiltration of the subarachnoid space with lymphocytes. There was no evidence of gross inflammation. Sections of the large blood vessels, including the internal carotid and middle cerebral arteries, showed a mild degree of arteriosclerosis.

DISCUSSION.

In this case, without appreciable warning, progressive hemiplegia, aphasia and stupor had developed and led to death within three weeks. At no time were there symptoms or signs suggesting increased intracranial pressure. It was, therefore, reasonable to assume at the beginning that the condition was progressive thrombosis of the middle cerebral artery causing a wide area of infarction of the brain. Actually this was the case but the mechanism of its production was not at first suspected. Later the turbid cerebrospinal fluid acted as a warning that the case was unusual from the standpoint of uncomplicated thrombosis in an arteriosclerotic patient. As a remote chance of saving the patient an exploratory craniotomy was carried out, and a large cerebral softening was found. However, postmortem examination revealed a small tumour in the tip of the left temporal lobe. Presumably it had not caused symptoms until by virtue of its situation it had led to compression and thrombosis of smaller branches of the left middle cerebral artery, with resultant softening of a large area of the brain. The course of events had been swift; only three weeks had elapsed from the initial symptoms until death.

The difficulties met with in differentiating cerebral tumours and cerebral softening if patients are more than fifty years of age are notorious. There is scarcely a text-book on the subject that fails to mention this problem. Many recent articles comment on the difficulty, amongst them being one by Bickel and Frommel[3]. They found, among a group of forty patients who had died from brain tumour, six whose condition had been diagnosed as single or multiple softenings of the brain due to arteriosclerosis. In none of these patients was the possibility of tumour even suspected. To begin with, all of the patients were more than sixty years of age and three of the six were more than seventy. The course of the disease was relatively short, and it progressed by successive apoplectiform episodes with regression of symptoms between. Vague premonitory symptoms antedated the first attack and mental deterioration of a type suggesting senile dementia was the rule. None of the six patients manifested signs of increased intracranial pressure and altogether the clinical picture was typical of single or multiple cerebral thrombosis and softening in

elderly patients. One patient, a man, age seventy-four years, markedly arteriosclerotic, had during a period of four weeks suffered from failure of memory, frequent slight attacks of unconsciousness and a tendency to fall asleep easily. During the last week of his illness he had an apoplectic attack with unconsciousness, leaving him with a flaccid right hemiplegia. He died in a few days from terminal bronchopneumonia. The clinical diagnosis was cerebral softening from progressive thrombosis of the left middle cerebral artery. Necropsy showed that he had a glioma of the left frontal area. In discussing a possible explanation for the mistaken diagnosis, Bickel and Frommel drew attention to the fact that all six patients were elderly and arteriosclerotic. The tumours were subcortical, deep, and in the majority of instances occupied silent areas of the brain. Cerebral vessels afflicted with arteriosclerosis tolerated any increase in intracranial pressure poorly. Cerebral thrombosis, therefore, was the rule before the tumour grew large enough to produce clinical signs of increased intracranial pressure. Accordingly, the clinical manifestations of these cerebral tumours in senile arteriosclerotic patients were simply those of cerebral thrombosis and softening. Possibly, had this not occurred, leading to death after one or more episodes, the usual signs of cerebral tumour might have appeared later. Actually the six patients died before any suspicion was aroused of the presence of a tumour of the brain which was masked during life by symptoms of cerebral arteriosclerosis and encephalomalacia.

The same problem, but in relation to younger patients, is described by Riley and Elsberg[10] and emphasis is laid on the large areas of softening occasionally associated with infiltrating cerebral tumours. They describe three groups of cases. In the first group the symptoms were due to cerebral vascular degeneration alone, in the second group to infiltrating cerebral neoplasms uncomplicated by vascular changes, and in the third group to infiltrating cerebral tumours associated with large areas of cerebral degeneration round the tumour. Considerable similarity may exist in the clinical picture of each group, and to distinguish one from the other may be difficult. The third group mainly concerns the present discussion and in connection with it they report the cases of four patients between the ages of thirty-six and forty-seven years. In all of the cases the symptoms and course of the disease in its early stages were like those of a progressive cerebral vascular lesion. Surgical exploration nevertheless was carried out in all four because of a reasonable uncertainty about the diagnosis. In two the surgeon was deceived by the extensive area of softening, and he doubted the existence of anything but vascular disease. Later, signs of increased intracranial pressure appeared and caused a change of opinion. Necropsy in both these cases showed deep-seated infiltrating tumours. In the third case a diagnosis was made both clinically and at operation of softening due primarily to vascular disease. Death occurred before signs of increased intracranial pressure appeared, but

necropsy showed a tumour. In the fourth case the true state of affairs was recognized both clinically and at operation and later proved by necropsy. Riley and Elsberg assume that the absence of signs of increased intracranial pressure early in the disease is due to the softening making room for the growing tumour. The large areas of softening associated with these infiltrating tumours were thought to be due to compression of some large vessel by the tumour. Three of the tumours were gliomas (type unspecified), while one was a spongioblastoma.

Another factor to be taken into consideration in regard to the problem of associated tumour and softening, is the histological character of the growth. In the case recorded here the tumour was a spongioblastoma multiforme. As described by Globus and Strauss[4] this is the one type of tumour frequently associated with an acute, almost precipitate onset of symptoms, an extremely rapid development of clinical manifestations and an unusually brief clinical course terminating in death. Bailey and Cushing[2] also refer to this rapid progress and estimate a grave prognosis in cases in which such a tumour can be diagnosed at operation. They also point out the relative frequency with which it appears in middle life. It is predominantly represented in the fifth decade when hypertension and arteriosclerosis appear to confuse both the picture and the clinician. In a later article Globus and Strauss[5] emphasize this difficulty. Among others they report the case of a woman, age fifty-two years, who had hypertension and general arteriosclerosis. Right hemiplegia developed within the period of a week before admission to hospital. She was apathetic, resistant, confused, somewhat disoriented and emotionally unstable. The eye-grounds showed retinal arteriosclerosis and at first a diagnosis was made of cerebral arteriosclerosis with softening in the left motor area. Three weeks later, swelling of the optic disc appeared and increased to 5 diopters. Accordingly a diagnosis of tumour was made, and was confirmed later by necropsy. From the standpoint of pathology these authors, as well as Bailey and Cushing, refer to the marked hæmorrhagic necrosis and degeneration in them and the wide zone of cerebral œdema surrounding them. From what has been said before, it is possible also that the site of the tumour and the condition of the cerebral vascular system have a further influence in the degree of infarction occurring in and round the tumour. In this case the rapidly growing tumour situated at the tip of the temporal lobe probably compressed the middle cerebral artery by virtue of the failure of the brain to accommodate itself to so speedy a change in volume. The occlusion of such a large vessel would tend to increase the degree of local necrosis in the tumour as well as to produce a large area of softening around it. Further, if a patient is in the latter part of the fifth decade the cerebral vessels tolerate poorly any disturbance in circulation, and thrombosis results readily. The onset and course of the disease, the clinical picture, the findings at operation and later at necropsy, may reasonably be explained by the histological character of the tumour as well as its particular situation.

The changes in the cerebrospinal fluid, which were a striking feature of the present case, are a little harder to understand ; yet parallel situations are to be found in the literature, and the microscopic findings in the brain were of considerable help in clearing up the problem. A moderate pleocytosis in the cerebrospinal fluid is occasionally found in cases of tumour of the brain and in cerebral softening. Greenfield and Carmichael[6] state that five to ten cells per c.mm., many of which are macrophages, may occur in cerebral tumour, hæmorrhage or softening. Patten[9] states that with encephalomalacia in the course of cerebral arteriosclerosis, pleocytosis is frequently encountered. Bickel and Frommel[3] studied the serological manifestations in thirty cases of cerebral softening in arteriosclerosis and found pleocytosis in less than a third of the cases. They considered this frequency as not to exceed that found in cases of brain tumour. Babinski and Gendron[1] reported three cases in which the cerebrospinal fluid contained pleocytosis shortly after the occurrence of cerebral thrombosis, due to embolism in two and arteriosclerosis in the third case. In one case there were 450 cells per c.mm. the day after the cerebral accident had occurred. The relative proportion of the cells was 90 per cent. polymorphonuclear leucocytes, 6 per cent. mononuclear leucocytes, and 4 per cent. lymphocytes. Later punctures produced a fluid containing less cells and a preponderance of lymphocytes. Finally the cell count returned to normal. Marie and Gougerot[7] have noticed what they describe as an aseptic meningeal reaction in recent cases of cerebral thrombosis and softening. This consists of a pleocytosis of lymphocytes, 50 to 100 per c.mm., and occurs in the early weeks following infarction of the brain.

Altogether in the literature there is little to suggest that simple thrombosis with infarction is frequently associated with anything like the changes found in the spinal fluid of the patient described here. From the standpoint of cerebral tumour, Spurling and Maddock[11] venture to say that here the cell count is generally low, usually under three per c.mm., but some latitude must be allowed for exceptional cases. Moersch[8], for example, has made some observations in this connexion. In a group of 127 cases of brain tumour studied by him in which the diagnosis had been proved by operation or necropsy or both, nineteen showed an increase in the cell count in the spinal fluid. The nature of the cell count was predominantly lymphocytic, but in five cases the polymorphonuclear cells were in excess. The highest cell count occurred in the case of a tumour of the anterior portion of the corpus callosum. It involved both lateral ventricles in their anterior portion. A series of fluids taken in this case showed as high as 556 polymorphonuclear leucocytes per c.mm. and in one count 123 lymphocytes. The fluid was distinctly turbid. In a case of glioma of the frontal lobe which had invaded the lateral ventricle, there were 50 polymorphonuclear leucocytes and 36 small lymphocytes. Moersch believes that this invasion of the ventricular cavity or penetration of the ependymal lining by the tumour might be a factor in the production of the pleocytosis ;

Greenfield and Carmichael[6] also suggest this possibility. Turning to the case recorded here, the necrotic degenerating tumour surrounded the anterior part of the inferior horn of the left lateral ventricle and, further back, softened brain tissue surrounded it on all sides, even to its origin from the body of the lateral ventricle. Microscopic study of the walls of the ventricles showed, in a few places, numerous masses of polymorphonuclear leucocytes lying just under the surface of the ventricle which was denuded of its natural barrier, the ependyma (fig. 5). It is natural to suppose that these collections of

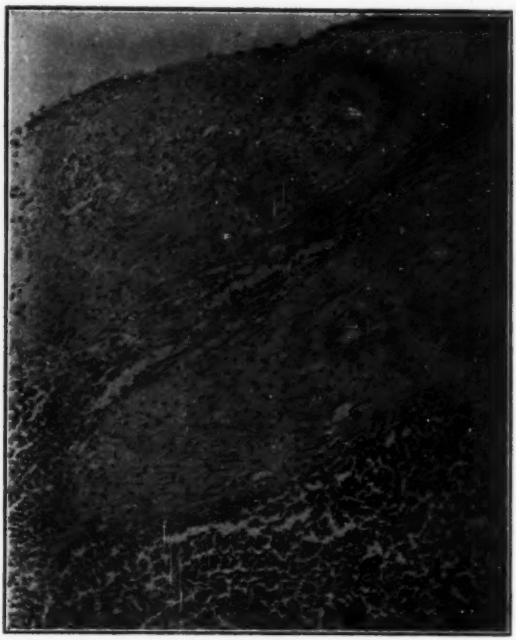

FIG. 5.—Section of tissue taken from the wall of inferior horn of the left lateral ventricle. The ventricular surface denuded of ependymal lining is at the upper margin. Below it is œdematous brain tissue crowded with 'gitter' cells. Masses of polymorphonuclear leucocytes may be seen in the lower part of picture; on the left they approach the ventricular surface (x 100).

leucocytes represent a reaction of the tissues to the massive areas of necrosis and softening in their midst. Being so close to the ventricular cavity and not having any hindrance, contamination of the cerebrospinal fluid with these cellular products of tissue reaction was a necessary consequence. In places the masses of polymorphonuclear cells were so dense as almost to suggest an

abscess. The cerebrospinal fluid, however, was sterile, as shown by repeated failure to find organisms in it, and constant failure to grow any bacteria on culture. The findings in this case, therefore, seem to support the assumption of Greenfield and Carmichael as well as that of Moersch, that infiltrating necrotic tumours involving the walls of the ventricles and penetrating the ependymal lining may be associated with highly cellular cerebrospinal fluid. The preponderance of cells may be polymorphonuclear leucocytes and actually in great numbers.

The case reported here represents a few of the many reactions of the brain to tumours growing in its substance, and also represents the clinical picture that may possibly result. The age of the patient, the condition of the cerebral vascular system, the site of the tumour in relation to the large blood vessels and ventricular cavities, its rate of growth, and above all, its histological character, are all factors worthy of consideration in producing such an end result.

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PERSONALITY AND PSYCHOSIS: A STUDY IN SCHIZOPHRENIA.

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It has been thought that a presentation side by side of the two cases here described would be of value for the following reasons: firstly, in view of the contrast in their clinical pictures; secondly, because of a similarity in the life-history, life-situation and, to a lesser degree, in the personality; and finally as an illustration of the value of the grouping of clinical material in reaction-types rather than in hard-and-fast diagnostic categories. That grouping in this fashion leaves an unclassified residuum must, however, be clearly realised.

It is chiefly to Adolf Meyer that we owe the conception of mental illness as a reaction to life and its demands, of whatever nature. This conception is the logical outcome of his dynamic psychology, and he has recently put the matter in this way with special reference to the schizophrenias.

"We can characterize the present-day attitude as more largely non-dogmatic, freely nosological, genetic-dynamic, with a formulation in which reaction-types, the factors entering into them, the prognosis and the therapeutic assets are given equal and relatively independent consideration." There probably is to-day a widespread preparedness to accent the full development of Meyer's formulation of parergastic-paranoid reaction-types based on a frankly pluralistic psychobiological integration concept, treating the susceptibility to special types of deterioration as an important issue, but making of the prognosis in general a specific sub-aspect, as in any other disease, and not too essential and exclusive an aspect of the whole group-problem. The description of the picture (that is, the patient's condition) "brings out material of fancy and maladaptation with striking passivity reactions and disorders of fusion of the psychobiologically integrated functions, which express more clearly than any neurologising or physiologising formulation the actual state of the patient."

Put in another way the problem resolves itself into this—that every individual is faced with a constant series of life problems, of a greater or lesser degree of difficulty, constantly changing and being modified. To these, reaction is essential for even the barest continuity of life, and it is where the reaction is a faulty reaction, where the adaptation is in consequence a maladaptation, that we can say we are dealing with mental ill-health. The problem of reaction is not only one of class but of degree and Meyer uses the terms "part" and "total" to group the cases. He employs "part-reaction" to indicate a psychoneurosis and "total-reaction" to indicate a psychosis. The distinction is difficult to define but may best be looked at in this way. In the neurotic the personality is little changed; reality values are changed

only quantitatively and have the same meaning as they have for the rest of the community; while the psychotic has retreated from his problems to the extent of developing a reality-change both qualitative and quantitative, and his personality shows in consequence a distinct change. To some extent it is true to say that the psychotic lives in a world of his own, while the neurotic apprehends the self-environment relationship in the socially accepted manner.

Mal-reactions may be determined in many ways: by faulty mental hygiene in upbringing, or by psychopathic surroundings, or by some physical or psychical defect in the individual, or by a combination of these.

Going on these lines we approach our patient from a dynamic view-point, and an attempt is made to decipher the integrative development of the whole personality from infancy onwards.

We must view the personality of the patient in the light of his internal developments in response to the needs of his total life-situation; and here we must look for evidence of his responses, for his attempt to make life what he would like it to be, either in fancy, or by normal aggressive activity. We must strike a balance between the external forces at work and the internal forces, synthetic and adjustive, which interact with them.

It must be clearly borne in mind that a reaction, once established, is not necessarily stereotyped. On the psychotic as on the normal, the influence of reality continues to impinge in a modified but none the less definite way, and so we have no grounds for ever regarding our cases in the fatalistic diagnosis-prognosis way so productive of therapeutic nihilism in the past.

PERSONAL CASES.

CASE 1. Unmarried woman, age 55.

Her birth and infancy were normal and no other members of the family showed evidence of psychopathic trends.

Her school life soon revealed an inferior reaction. She had to be taken away from school because she was bullied. It was said of her that her spirit had been broken by the treatment she had received.

She then lived at home for some years until she was 17 and had a fairly hard life. She was the oldest of a family of seven and she had to look after them. We are informed that she was at that time more stable than ever before or since.

The atmosphere of her home was a stern one. She had little outlet. Her relaxations were in nature and in books, and she began to show a dreamy, shut-in trend.

She then went to Canada as the guest of an uncle and was there for a year, but came home and set off soon after for Germany with a friend who was studying music. She soon tired of this and after a short time went to London where she lived, off and on, until the time of her breakdown. Her life in London was unsettled and shifting; she moved from boarding-house to boarding-house and took an interest in various organisations of the 'Free-Thought,' 'Brighter Thinking,' 'Christian Science' type. She did not at any time devote any energy to working for a useful organisation, and the esoteric pseudo-psychological atmosphere of the cults she adopted satisfied her in a way with which we are familiar in this type of personality. As time went on she became more and more erratic in her behaviour. Her activities, uncontrolled and over- or under-energetic, culminated in a sense of illness which led to her seeking medical aid. She was in the

hands of various psychiatrists in London from whom we have no information, and finally she went to the Cassel Hospital. Here we have the first indication of a deviation from the normal so marked as to constitute a total reaction, that is, a withdrawal from reality in the terms already indicated. She went into a chemist's shop and said that she was being annoyed by spirits. This was but a momentary flight, and she denied the whole thing immediately after. A little later she was in Camberwell House for a month and was then "excitable, garrulous, talkative, interfering, discontented and fault-finding." A fortnight later she was admitted to the Edinburgh Royal Asylum in the same state, which gradually altered until she reached a condition described as "mildly depressed, unhappy, unable to concentrate, and worrying." After four months she went home only to break down and was admitted to the Glasgow Royal Mental Hospital three weeks later.

On admission she was fantastically and ornamentally dressed, surrounded with books interleaved with cuttings; flowers, scraps of paper, pens, articles of dress and so on lay around her. She showed some 'flight': "I want to know who you are. Do you know Dr. ——? That doctor says his name is Gordon—now I know the Gordons—he may be a relation—I want to know if he has anything to do with Dr. ——. What has happened to all my things?"

She was distractible and could be led away from controversial topics with ease. She showed some motor activity and paced about her room, at one time demanding that the physician swear to protect her on her mother's Bible, at another telling how musical she was.

All this suggested strongly a hypomania, but more careful examination made it clear that there was a more ominous factor which showed a type of reaction not in accord with the manic-depressive group.

She said she had been spiritually wedded to a "Harley Street physician," that during a vaginal examination "something had been broken which had never been broken before," and that she was increasing in girth. She spoke of the "Mother Heart." "A woman is good for nothing unless she has been a mother," hastily adding, "one does not need to bear children to have the Mother Heart."

In this she showed a typical ambivalence in her sex attitude. She also went on to say, "I never contacted with a man in my life—I was too proud—never let a man see I cared. If they squeezed me at dances I just finished with them—all this is due to a love affair—I don't know if I'm married or just spiritually linked." She said that her lover came to her in various guises, usually as any physician who happened to be looking after her. On one occasion she said that her wedding was to be celebrated the next day.

Following this there came a quiet spell in which she was religiously ecstatic. She expressed many bizarre ideas: "I am working on blue to-day—I am working from the absolute to reality—there must be no hate in the world—everything is beautiful."

By the end of a month she had again passed through an excited phase and then became quiet and reasonable, able to carry on a normal conversation. This lasted a week and then she became dull. She expressed herself in a way that gave definite clues for the grouping of her case.

She spoke of unreality in her surroundings, of emotional loss and lack of interest, and said that she had difficulty in separating her imaginations from reality. She said that she realised she was given to day-dreaming and when faced up with a frank account of what she had said on admission she admitted that she realised some of it had perhaps been imagination. At the same interview, however, she spoke in a mysterious way of the resident psychiatrist, and said she was of the opinion that he was not the person he was supposed to be. From this time until the present, for a period of four months her reaction has not been of the *total* type. She has been living in the same world as those around, and her delusions, now in abeyance, are not governing her conduct. In their stead there has been a hypochondriasis which we may regard as a *partial* reaction.

COMMENT.

Here we have a case in which there has been an abnormal arrangement of the real and the imaginary. The phantastic has played the principal part in determining conduct in defiance of the claims of the real, and on that account alone we are justified in grouping the reaction in the schizophrenias. There has been an alteration in personality.

From the psychobiological viewpoint, however, we can see more. We can see a life-history where the demands of reality have never been met, where there has been from the early days of school life an inability to accept the world as it is; and out of that have come a striving to make things fit, a discontent, a restlessness, a gradually growing tendency to neglect reality, and finally the development of a frank psychosis.

Her picture of herself as a proud cold girl, repelling male advances, is very characteristic. It shows an ambivalent attitude, but it suggests as well the "light intangible breath of aristocratic boldness and distance" which Kretschmer refers to in a passage where he speaks of these personalities "leaving their corner with a sudden jerk as enlightened and converted and then . . . they preach the ideals of humanity, raw dieting, gymnastics, the religion of Mazdazdan or the future, or all these at once." It is not too much to say that this falls in with our information in this woman's case.

Furthermore, her ill-directed, capricious life in London—mystic, useless, egocentric—affords an example of imperfect reality contacts. There is no evidence in her of normal warm, human sympathy. The latter is conspicuously absent in her, as in schizophrenics generally.

Again to quote Kretschmer: "Schizoid men have a surface and a depth." One sees clearly in this case how well this characterisation fits.

CASE 2. Female, single, age 45.

This patient is the fourth of a family of six. The other members are all healthy both mentally and physically. The heredity shows some neuropathic trends. Three members of a family of second cousins on her father's side were described as "queer," and one of them was definitely psychotic.

Her father was of an "eccentric" temperament and did not reach a high standard of activity. He had some money left him and never showed any tendency to occupy himself in any hobby, but lived an idle life without activity or interests of any kind. With him the patient was *en rapport* more than with anyone else.

Her birth and infancy were normal but from an early age she showed a difference from other members of the family. She seems to have been mismanaged to some extent because she did not go to school until she was about eight years old, being taught by a governess at home. This is said to have exaggerated her tendency, already noted by her family, to be "different" and "shut-in." At school she was lazy and did not show a special bent in any direction but drifted through as best she could. As a child she exhibited obstinacy and self-will, and would go to the kitchen and sit with the maids rather than play with her brothers' and sisters' friends. She did not go in for any games, had no hobbies, and was inclined to play malicious tricks. She had a certain number of friends of her own but they were not the kind her brothers and sisters had, being unreliable and shallow.

She had wit, and was an excellent mimic, but there was no warmth or affection in her conduct. On several occasions she said she was engaged to be married but no one ever saw her fiancé. Nevertheless she possessed some attractiveness for the opposite sex and once achieved actual engagement, but the affair was broken off by mutual consent after a year or so. For the rest, she was subject to tantrums and was a dreamer, given to rumination.

About twenty years ago, after the death of her mother, she started a wandering life of her own—sometimes with her father, sometimes alone. She began to be recklessly extravagant and showed complete lack of any plan in her mode of life. Her affairs were soon in a muddle and responsibility had to be repudiated for her debts on several occasions. She showed no occupational output at this time of any kind and was quite cut off from all touch with her family. Her father had still some control over her and defended her, but he lacked steadying influence upon her. She was deficient in moral sense as regards money and ordinary truthfulness.

When he died, however, she went from bad to worse and the first evidence of a psychotic reaction showed itself. She became very excited and restless, and was a nuisance to the family lawyer, to whom she complained of vague persecutions. Her existence became still more nomadic and she was never long in the same hotel. From time to time she lived with her aunt and was very difficult to deal with, on account of her wilful and irritable manner and the irregularity of her habits.

Finally she became so disordered that she broke away from reality in a *total* reaction, where she said (without foundation) that the family physician was going to marry her as soon as he could get a divorce. She bought a wedding gown and began to send letters to the object of her affections. At the same time her paranoid trends became more marked and she complained of smells, of people watching her, and of conspiracies of a very vague nature; some hallucinosis of hearing also occurred.

Admitted to hospital, she showed a clinical picture differing only superficially from that of Case 1.

She was quiet, reserved, lackadaisical and indifferent. Her stream of mental activity showed a curious disorder. Her answers, at the beginning quick and *a propos*, tailed off into a series of phrases only slightly related, in such a way as to give the impression of a 'flight,' and this in spite of the absence of any suggestion of a manic reaction in her general behaviour. "I don't know about all this—I don't care, it doesn't matter—if I had got a bottle of some stuff from the chemist it would have been all right—or just gone up-town with my hat on the back of my head—I'm a bit of a high stepper—one of the Cheerios—artistic—a bit dreamy as all artistic people are—and of course high-strung—my handwriting shows that—I was always noted for my handwriting—strong—showed a lot of character—just like my father—he was a sportsman," and so on. If allowed to talk she would go on in this fashion; on this particular occasion she passed from her father to her wish to go up-town, then to a vague complaint about her menstrual periods, and on to a vague account of a love affair. It was easy to distract her and she would talk about anything suggested to her, but there was no 'clang' and the simple interjection of a word was not enough to change the drift of her talk.

It was also noted that she showed some unsteadiness in her affective tone. At times there was almost a euphoria as she told what a 'sport' she had been. At others there was a total lack of affective response which contrasted oddly with what had gone before; there was a certain jerkiness and lack of integration and of warmth. No evidence of crude perceptual thinking in a frank hallucinosis was found, but a disharmony of affect and manifest thought. At times there were indications of poverty of thought, and in her halting speech, signs of blocking.

When she was asked about the doctor she expected to marry she said, "It was a mix up—we were both the same—people were sending things—it should have been him." In

her sex attitude there was a strange tinge. She said "I'm not keen on men that way (marriage)—never was—always a sport, more like a man myself—that was being with father; he was a sportsman."

COMMENT.

We have here a personality different from that of Case 1, yet showing early schizoid trends and developing a psychosis along different lines but in response to a similar life-situation. From early youth the patient had failed to keep the mental level of her companions and had taken refuge in a life of fantasy which she had elevated into a thing more worth while than the mundane activities of the ordinary person. Her fruitless youthful love affair and her remarks about men, with the development of her erotic wishes to the family doctor, form an interesting couple, indicating, as has been said, an ambivalence. In the shelter of her home where her eccentricity was tacitly allowed for there seems to have been little evidence of disorder. Then came the period of hydropathic wandering, with a final disorder of reality-contacts and the development of a psychosis.

It will be seen that there is much in common in these two cases which is only brought out on careful study of the personality, the situation, and the psychosis as a whole. Careful comparison, moreover, shows that the two apparently dissimilar clinical pictures have much to justify their inclusion in a joint group. Case I corresponds to a type of person described by Kretschmer as "nervous and excitable, a lover of nature, a reader, with fine feelings and sensitive." Case 2 conforms to another variant of the same group whose members are described as unsociable, quiet, reserved and eccentric. Both develop their personality along similar lines. In each case we have definite evidence of what Bleuler describes as "autism," the living of a fairy-tale in response to a failure to adapt to social demands. Each finds refuge in home life on a low level, the one for a longer period than the other. On being deprived of the shelter thus afforded, each lives a drifting aimless life, different only in that one becomes somewhat of a ruminative eccentric and the other a 'New-Thought' faddist.

Each has sex wishes gratified by the development of a delusional system which does not drive to activity as does that of the paranoiac, but which provides material for the autistic world in which they both live.

In both we find a false proportion between the 'I' and the external world. In Case 1 it shows itself as a proud distance, the girl rejecting all male advances and the woman possessing a dream lover; in Case 2 as the lazy dreaming eccentric with her careless indifference to the activities of her environment. Both represent a state described by Kretschmer as "dying off of the allo-psychic resonance together with a hypersensitivity of the auto-psychic."

Each shows a disorder of affectivity more complex, but none the less definite, than a simple disharmony between mood and thought. The affect has been dislocated, not destroyed. In Case 2 we have an indifference: "I

don't know—I don't care—it doesn't matter,"—the "euphoric cooling" of Bleuler. In Case 1 there is seen a reaction showing a very close resemblance to a phase of cyclothymia; but on closer inspection there is an affective rigidity, an absence of the smooth mobility of the true hypomanic. Of this condition it has been said, "It resembles flight of ideas, but an absence of objective becomes noticeable through the lack of an emotional value; while in the flight of ideas the objective is merely changed" (Bleuler). Furthermore, there was complete absence of emotional *rapport* between patient and listener. The former's mood did not communicate itself. Both show very clearly a turning-away from reality and indulgence in a substitute; in the one case, a suspicious brooding seclusiveness, and in the other, a fantastic religiosity. Both were dominated by their complexes and both showed a disintegration. It is of note that not until a later age than usual did the psychosis declare itself—an example of what Kretschmer indicates when he says: "People . . . for years . . . original and unfriendly personalities may disclose to us that the greater part of the time they carry the most fantastic illusions about with them."

We have here a justification of the view expounded by MacFie Campbell that psychosis and personality are of the same stuff, and that the psychosis can be looked upon as an extreme degree of difficulty of adaptation; this amounts to a restatement of the concept mentioned earlier that schizophrenia is not a hard-and-fast diagnostic entity but a group of similar reaction-types.

It was, as Meyer says, by the promise of a prognosis that Kraepelin stimulated interest when he first built dementia præcox into a nosological entity. This promise has not been fully implemented; but as a result of his formulations, and the modern method of regarding the condition not as dementia præcox but as the schizophrenias—as a series of reaction types—we have been rescued from an attitude of universal pessimism about these cases. We have been forced to group our case material, to judge each case on its merits, to see the essential points of similarity, and thus to modify individual prognoses within a common group. It is the study of the development of apparently different cases such as are shown here that makes for firmer and more fruitful clinical thinking.

One can hardly conclude better than by quoting from Meyer himself a passage where he says of the problem of psychiatry in general: "Much is gained by the frank recognition that man is fundamentally a social being, . . . and in this great field nothing will replace a simple study of the life-factors, and of social and personal life-problems and their working."

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DEMENTIA PARALYTICA: THERAPEUTIC MEASURES AND RESULTS.

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CLINICAL MATERIAL.

The malarial treatment of general paralysis was commenced at the County Mental Hospital, Rainhill, in June 1923; and later, in March, 1927, this form of therapy was augmented by arsenical treatment with tryparsamide.

The total number of patients with general paralysis—all clinical diagnoses being confirmed by serological investigation—admitted from January, 1923 to December, 1928, was 274, and of that number 182 have died, 51 are still resident, and 41 have been discharged as 'cured.'

To claim a scientific cure of this malady there must be, in addition to a remission of the mental symptoms (which determines the discharge of the case from certification), a disappearance of the accompanying physical and serological stigmata. This paper constitutes an attempt to record the after-histories of cases discharged as 'cured' in an endeavour to determine whether or not we can claim a 'scientific cure' for the disease.

Of the 41 patients discharged as 'cured,' over a period of five years, we have been able to keep in touch with 30, 14 of whom have submitted to further investigation of their blood and cerebrospinal fluid.

A preliminary analysis of these thirty cases gives the following statistical results:

1. Four have died. Three of these patients were re-admitted to this mental hospital prior to death. The other patient died at home of an intercurrent disease, having shown no return of mental symptoms.
2. Two other patients have been admitted to other mental hospitals.
3. Twenty-four patients are still alive, enjoying normal mental health. Of this group of patients, two have been re-admitted to Rainhill, where they have had further treatment and are now discharged as 'cured' for the second time.

In order to facilitate the arrangement of a table analysing the cases, relative to the length of time since discharge, we shall here deal with the two cases which were re-admitted, as mentioned in the previous paragraph, and then dismiss them from further consideration in this series.

Case I. *T.E.C. Male, age* 38.

This patient was admitted to hospital in April, 1923, and presented a typical clinical picture of grandiose general paralysis, his certification reading as follows: 'Talkative, boastful, self-pleased. Very grandiose and lacking in insight. Memory poor.'

He was treated with induced malaria (twelve rigors) and was considered fit for discharge in November, 1923, having the distinction of being the first case of general paralysis to be discharged as 'cured' from the County Mental Hospital, Rainhill.

He remained in good health mentally and physically, returning to his occupation as ship's steward for three and a half years, i.e., until March, 1927, when, following a prolonged alcoholic carousal, he relapsed mentally and was re-admitted under certification.

Once again clinically he presented all the features of grandiose general paralysis, being 'restless, noisy, excited and violent with numerous delusions of a most exalted character.'

Treatment was instituted consisting of weekly injections of 3 g of tryparsamide, intravenously, for ten weeks. He improved rapidly, both mentally and physically, so much so that his relatives pressed for his discharge before a further course of malaria could be given. He was discharged for the second time in August, 1927, and has remained in good mental and physical condition since that date.

Appended are the details of the various examinations of the blood, cerebrospinal fluid and nervous system at the different times this man came under observation.

	C.S.F.			Blood	
Date.	Globulin.	Sigma.	Gold Curve.	Sigma.	
26.4.23	++	+++	5555552100	++++	At the first examination the Sachs-Georgis reaction was used.
30.3.27	++	3·9	5555543120	4·2	
3.12.28	++	6·3	5555532100	Nil.	

Examination of C.N.S.

Date.	Pupils.	Knee Jerk	Plantar.	Tremors.	Speech.
11.4.23	Unequal. R.>L. Sluggish to light.	Brisk and equal.	Bilateral flexor.	Tongue.	Normal.
18.3.27	Unequal R.>L. Sluggish to light.	Brisk and equal.	Bilateral flexor.	Tongue.	Normal.
3.12.28	Unequal. R.>L. R. Sluggish. L. Inactive.	Brisk and equal.	Bilateral flexor.	Nil.	Normal.

As an indication of the degree of mental recovery and intellectual insight in the above case the following incident may be cited. It was previously noted that the man's occupation was that of ship's steward and that his mental relapse followed an alcoholic debauch. Following his second discharge the patient effected a change in his occupation, becoming a dock-labourer, in order to avoid—as he put it—'booze and women,' a definite indication of clear insight into the cause of his relapse and also a manifestation of self-control.

CASE 2. *M. A. M. Female, age* 37.

This patient was first admitted in March 1927 and presented a clinical picture suggestive of general paralysis, the more prominent features being 'marked confusion with distinct impairment of memory and illusions with respect to the identity of those around her.' The diagnosis was confirmed by serology.

This patient was subjected to malarial therapy, having twelve pyrexial rigors, and showed such pronounced mental and physical improvement that she was discharged as 'cured' in July 1927. An interesting sidelight on her history may here be noted. Prior to her admission to hospital she had been married fifteen years without becoming pregnant.

Immediately following her discharge—after malarial treatment—she became pregnant, remaining well during the whole period of gestation. She was delivered of a child in April, 1928, and eight days later she completely relapsed mentally, necessitating readmission to hospital under certification. She was 'restless, talkative, confused and amnesic. Unable to give a satisfactory account of herself and her habits were faulty.' Immediately after her admission to hospital she had numerous epileptiform seizures associated with much mental confusion and motor restlessness.

She was given a course of ten injections of tryparsamide followed by induced malaria, which spontaneously aborted after the ninth rigor. During the course of treatment the patient had occasional seizures. Mental improvement was again quickly registered and she was discharged for the second time in November, 1928.

Appended are the details of the blood, spinal fluid, and reflex reactions.

	C.S.F.			Blood
Date.	Globulin.	Sigma.	Gold Curve.	Sigma.
30.3.27	+++	21.3	5555542100	21·3
25.4.28	+	4·9	5555431000	3
20.11.28	+	4·9	5555431000	3

Examination of C.N.S.

Date.	Pupils.	Knee Jerk.	Plantar.	Tremors.	Speech.
28.3.27	Equal, inactive to light.	Brisk.	Bilateral flexor.	Nil.	Poor.
25.4.28	Equal, inactive to light.	Brisk.	Bilateral flexor.	Tongue.	Poor.
20.11.28	Equal, inactive to light.	Brisk.	Bilateral flexor.	Nil.	Fair.

A consideration of the two cases detailed above reveals the following points.

1. Rapid and pronounced mental improvement may take place without corresponding improvement in the serological reactions.
2. The mental relapse in both cases was due to an obvious precipitating cause—alcoholic excess in the male; the stress of labour and puerperium in the female.
3. The reflex reactions showed no response to treatment.

ANALYSIS OF CASES.

Now let us consider the fate of the other patients who have been discharged as 'cured' and who are still enjoying mental health.

Below is a Table showing the various periods which have elapsed since their discharge.

Period since Discharge.	Number of Cases.		Totals.
	Female.	Male.	
6–12 months	3	5	8
1–1½ years	3	3	6
1½–2 years	0	1	1
2–2½ years	0	1	1
2½–3 years	0	1	1
3–3½ years	1	1	2
3½–4 years	0	0	0
4–4½ years	0	0	0
4½–5 years	1	2	3
	8	14	22

The above 22 cases comprise eight females and 14 males, six of whom have now been discharged from certification for over three years, during which time they have been perfectly well mentally.

An obvious commentary on the degree of mental improvement is afforded by the fact that of the fourteen male patients twelve are in regular employment; of the other two males one is a casual labourer and the other has had to give up his occupation owing to failing vision (probably a late effect of tryparsamide). In the case of the eight female patients all are performing their own domestic duties satisfactorily, while one has obtained employment as a shop assistant.

In view of the prevailing unemployment affecting practically all sections of the community the above figures are, I think, the best appraisement of the value of treatment and furnish an indication that the degree of mental recovery is such that ex-patients can successfully compete in the labour market.

Of these twenty-two patients, all of whom have been personally examined during the past few months, twelve have submitted to an investigation of the present state of their blood and spinal fluid. The findings in the individual cases are analysed in the accompanying Tables.

As will be noted, the Sigma reaction in blood and C.S.F. is used, for the following reasons.

1. The technique is simpler than the Wassermann and the possible sources of error less.
2. The result, expressed in units per c.c., based on macroscopic flocculation, gives a quantitative as well as a qualitative index of syphilitic infection. Hence response to treatment can be more accurately gauged.

The first Table (numbers 1–5) records the serological findings and reflex reactions in five cases treated with malaria only, while the second Table

(numbers 6–12) deals with seven cases treated with tryparsamide and malaria. In view of this difference in treatment the results in the two groups will be separately analysed before final comparison is made.

Group A.—Malaria Treatment Only.

Serological response to treatment.

The globulin content shows a marked diminution in all cases and has been rendered completely negative in case 1.

The Sigma factor in the C.S.F. has been profoundly affected, four of the cases being returned as negative, and case 4 showing a marked reduction from 25 to 2 units per c.c.

The gold curve in four cases has been definitely affected in the direction of a return to the normal. Cases 1 and 4 give the best readings. On the other hand, case 5 still registers a definite paretic curve.

The blood Sigma units have been reduced in all cases except case 5, in which there is an increase. It is interesting to note that no case has been returned as negative to somatic syphilis.

Reflex response to treatment.

The pupillary reflex is the only one showing any change. Case 2 is recorded as exhibiting the Argyll Robertson pupil phenomenon in 1925 and now gives normal responses. All other reflex reactions have been unaffected.

Tremors where present before treatment have completely cleared up in all cases.

Speech where impaired prior to treatment has distinctly improved.

Group B.—Tryparsamide and Malaria Treatment.

Serological response to treatment.

The globulin content has been materially reduced in all cases, Case 7 being returned as negative.

The Sigma factor in the C.S.F. has been rendered negative in six of the cases and materially reduced (from 6·2 to 1·2 units per c.c.) in case 10.

The gold curve has been definitely affected by treatment, in the direction of a return to normal, in five of the cases. Cases 10 and 12 still yield typical paretic curves.

The blood Sigma has been rendered completely negative in two cases, while the other five cases show material reduction therein.

Reflex response to treatment.

The pupillary response has been affected in five cases. Case 7 was recorded on admission as pre-Argyll Robertson, but following treatment the responses are now normal.

RECORDS OF FIVE CASES TREATED

Name, sex and age.	*Dates of*		*Blood and cerebrospinal fluid.*				
	admission.	*discharge.*	*Date of examination*	*Globulin.*	*Sigma*	*Gold curve.*	*Blood Sigma*
(1) A.M. Female Age 51	11.10.1923	29.3.1924	20.10.1923	++	Sachs Georgis. +++ve	Typical Paretic.	Sachs Georgis. +++ve
			4.2.29	Nil.	Negative.	0011000000	31·95
(2) H.M. Male Age, 42	18.6.25	27.10.25	19.6.25	+++	3·9	5555544100	26·1
			20.1.29	±	Negative	2233210000	3
(3) P.J.D. Male Age, 39	27.6.25	29.5.26	30.6.25	+++	18·6	5555552100	62·7
			24.1.29	+[illegible]	Negative	1121000000	13·95
(4) A.E.K. Male Age, 36	19.11.26	30.5.27	22.11.26	+++	25·35	5555554300	25·35
			27.10.28	±	2·025	0001110000	4·95
(5) E.Mc.M. Female Age, 48	8.1.26	17.1.28	13.1.26	+±	2·4	5555431000	Negative
			24.1.29	±	Negative	5554442000	12·6

TREATED WITH MALARIA.

Mental state on admission.	*Examination of nervous system.*					
	Date.	*Pupils.*	*Knee jerk.*	*Plantar.*	*Tremors.*	*Test words.*
Restless, noisy and confused. Says she is Queen of England and has many estates. Wet and dirty habits.	12.10.23	Small equal inactive to light.	Not elicited.	Bilateral flexor.	Nil	Good.
	4.2.29	Small equal inactive to light.	Not elicited.	Bilateral flexor.	Nil.	Normal.
Restless, talkative and confused. Delusions of an exalted character. Says he can swim the Channel and beat Jack Dempsey.	18.5.25	Equal inactive to light.	Brisk.	Bilateral flexor.	Nil.	Normal.
	20.1.29	Equal react normally.	Brisk.	Bilateral flexor.	Nil.	Normal.
Confused and exalted. Memory impaired. Cannot give a good account of himself.	27.6.25	Equal react normally.	Brisk.	Bilateral flexor.	Tongue and lips.	Normal.
	24.1.29	Equal react normally.	Brisk.	Bilateral flexor.	Tongue and lips.	Fair.
Lost and confused. He can give no rational account of himself. Habits faulty.	22.11.26	R. > L. Sluggish to light.	Brisk.	Bilateral flexor.	Tongue and lips.	Fair.
	27.10.28	R. > L. Inactive to light.	Brisk.	Bilateral flexor.	Nil.	Normal.
Restless, confused and incoherent. Occasionally noisy and excited. Wet and dirty in habits.	8.1.26	Normal.	Brisk.	Bilateral flexor.	Tongue and lips.	Very bad.
	24.1.29	Normal.	Brisk.	Bilateral flexor.	Tongue and lips.	Fair.

Name, sex and age.	*Dates of Admission.*	*discharge.*	*Date of examination.*	*Findings in Blood and cerebrospinal fluid.*			
				Globulin.	*Sigma.*	*Gold curve.*	*Blood sigma.*
(6)							
T.E.C.			21.3.27	++	Negative.	5555311000	4·8
Male	18.3.27	29.10.27	12.19.27	±	2·34	4443310000	1·34
Age, 45			27.10.28	+‖	Negative.	0011100000	Negative.
(7)			2.8.27	+++	1·2	5555420000	1·2
R.F.							
Female	29.7.27	20.12.27	19.12.27	+‖	Negative.	3222100000	Negative.
Age, 42			13.10.28	Nil.	Negative.	0001000000	Negative.
(8)							
R.G.			15.8.27	++	4·3	5555553100	21·3
Male	11.8.27	24.2.28	17.1.28	±	Negative.	5554210000	21·3
Age, 35			13.10.28	±	Negative.	0011010000	0·72
(9)							
H.P.			22.6.27	+±	4·95	5555543100	61·2
Male	21.6.27	23.3.28	12.10.27	±	1·44	5555431000	1·5
Age, 43			27.10.28	±	Negative.	2234120000	1·7
(10)			12.10.27	++±	6·2	5555555210	1·4
P.M.			18.1.28	++±	1·3	5555554410	1·4
Male	28.9.27	23.3.28	1.3.28	++	1·3	5555310000	4·2
Age 48			24.10.28	+±	1·2	5545531100	0·5
(11)							
M.A.			14.9.27	++	6·9	5555554200	25·35
Female	9.9.27	28.4.28	12.3.28	+±	2·025	5555421000	7·5
Age 42			13.10.28	+‖	Negative	3444321000	4·95
(12)			6.1.28	+++	1·5	5555555500	3·9
M.F.			23.3.28	+	1·1	5555541000	0·975
Female	30.12.27	22·6.28	11.6.28	+	Negative	5555541000	1·2
Age 34			18.1.29	±	Negative.	5554210000	0·7

Mental state on admission.	*Examination of nervous system.*					
	Date.	*Pupils.*	*Knee jerk.*	*Plantar.*	*Tremors.*	*Speech.*
Depressed, confused and memory impaired. Takes no interest in his surroundings. Habits faulty.	18.3.27	Small, irregular, inactive to light.	Normal.	Bilateral flexor.	Tongue.	Good.
	27.10.28		Normal.	Bilateral flexor.	Nil.	Normal.
Restless, resistive and confused with impairment of memory. Habits faulty.	39.7.27	Dilated and sluggish to light.	Brisk.	Bilateral. flexor.	General.	Very bad.
	13.10.28	Equal and active to light.	R. + L. + +	R. : Flexor. L. : Extensor.	Nil.	Normal.
Restless, talkative, excited and exalted. Memory poor. He was apprehended by police in an attempt to swim from L'pool to Ireland.	12.8.29	Equal and active to light.	Normal.	Bilateral flexor.	Tongue.	Fair.
	13.10.28	Equal. R. Normal L. Sluggish	Brisk.	Bilateral flexor.	Nil.	Normal.
Restless, noisy and excited, violent, resistive and grandiose.	21.6.27	Unequal L.>R. Inactive to light.	R. present L. Not elicited.	Bilateral flexor.	Lips and tongue.	Bad.
	27.10.28	Unequal L.>R. inactive to light.	Normal	Bilateral flexor.	Nil.	Normal.
Restless, excited and confused and at times noisy, violent and destructive. Habits faulty. Clinical diagnosis : Mania.	30.9.27	Equal and active to light.	Brisk.	Bilateral flexor.	Nil.	Good.
	24.10.28	Equal. R. Sluggish L. Normal.	Brisk.	Bilateral flexor.	Nil.	Good.
Restless, talkative and confused. Memory impaired. Habits faulty.	9.9.27	Unequal R.>L. Sluggish to light.	Normal	Bilateral flexor.	Nil.	Poor.
	13.10.28	Unequal R.>L. Noreaction to light.	Normal.	Bilateral flexor.	Nil.	Fair.
Restless, talkative, excited, noisy and confused. Memory impaired.	30.12.27	Unequal L.>R. R. inactive L. Sluggish	Not elicited	Bilateral flexor.	Tongue.	Normal.
	18.1.29	Unequal L.>T. inactive to light.	Not elicited	Bilateral flexor.	Nil.	Normal.

On the other hand, cases 8, 10, 11 and 12 have all shown further pupillary change of a pathological nature—an indication that the disease process continued to exercise its effects in spite of active treatment.

The knee-jerk has been affected in cases 7 and 9. The former shows exaggeration of the reflex on the left side as part of an upper motor neurone lesion which has developed. The latter manifests a return to normal.

The plantar response was only affected in one case (No. 7), becoming extensor in type, indicating together with increased deep reflexes and absent abdominal response on the same side the development of an upper motor neurone lesion.

Tremors present before treatment have cleared up in all cases

Speech has been definitely improved in all cases affected.

It is obvious from a perusal of the two sets of findings detailed above that the results are substantially similar in both groups, the effect of treatment with malaria alone producing just as pronounced a response in the C.S.F. as the combined therapy. The only essential difference in the two groups of results is that tryparsamide seems to have effected a more substantial reduction of the somatic syphilitic factor.

In view of the above parallelism of results the question naturally arises, why use tryparsamide at all ?

The answer to the query is based on clinical experience of the nursing of cases of general paralysis and in the writer's opinion can be summed up thus.

The employment of tryparsamide as a therapeutic agent succeeds in ' rescuing ' patients who are in very poor physical condition and by effecting a substantial increase in body weight and distinct improvement in general physique brings them into a fit state for the employment of malaria as a ' curative ' factor. Or to put this observation in another way. A fair number of patients with general paralysis are admitted in such poor bodily condition that to employ malaria as an immediate therapeutic factor is to court an early demise, due to the added physical prostration consequent upon the fever. Such cases as these materially benefit by a preliminary course of tryparsamide.

If the above observation is a true statement of fact, then we should expect to find that the death rate from general paralysis has shown a definite reduction since the advent of tryparsamide as a ' rescuing ' factor.

The accompanying figures are available in confirmation of the above contention. As we have noted elsewhere, malarial therapy was commenced at this hospital in June, 1923, and tryparsamide added in March, 1927. We have therefore, chosen figures dealing with the death rate from general paralysis covering the years 1924 to 1928.

These figures show that in 1928, when the effect of the additional tryparsamide therapy was becoming operative, there occurred a pronounced drop in the percentage death rate from general paralysis. The figure 15·2 is the lowest death rate from that disease recorded at Rainhill during the past twenty years.

Year.		*Death rate from general paralysis.*
1924	Malaria only.	18·4 per cent. of total deaths.
1925		22·1 per cent. of total deaths.
1926		25·5 per cent. of total deaths.
1927	Malaria and tryparsamide.	22·6 per cent. of total deaths.
1928		15·2 per cent. of total deaths.

While recording these figures in favour of tryparsamide as a therapeutic agent and successful adjunct to malarial treatment, it is incumbent upon us to state that out of 90 cases of general paralysis, treated with this arsenical compound since March, 1927, the following complications have been encountered.

Complication.	*No. of cases.*
1. Jaundice occurring during treatment.	6
2. Arsenical dermatitis.	1
3. Peripheral neuritis.	1
4. Visual upset (*a*) Complete blindness	3
(*b*) Dimming of vision.	3

Thus while acclaiming tryparsamide as an important therapeutic factor, it is obvious from the above figures that the employment of the drug is fraught with possible danger due to the onset of serious complications, the most important of which is optic atrophy. Most of the above complications occurred during the first few months of the use of the drug, and since the adoption of greater caution in dosage, and the employment of the following methods, none have been encountered.

An attempt is made to assess the visual acuity of the patient before treatment with tryparsamide is instituted. Usually the mental condition of the patient is such as to preclude a thorough ophthalmological investigation being made, but as a general rule by asking him to read a passage from a book and noting the distance at which the print can be correctly translated, a defect of any moment, if present, can be detected. The mapping of the visual fields is in most cases impossible, as the patients are generally incapable of the requisite sustained intellectual co-operation. The fundus oculi is carefully examined.

If any visual defect is suspected, the employment of tryparsamide should be proceeded with cautiously (i.e., commence with 1 instead of 3 g and give the injections fortnightly, gradually increasing to the maximum dose). In addition the nursing staff should be taught to observe carefully the visual activities of patients under treatment and report any suspicious signs.

In a similar manner hepatic upset may be minimised by an investigation of liver function before and during treatment. The laevulose test is employed before treatment is commenced and if any dysfunction is detected proceed cautiously with the drug. During treatment the state of the liver should be gauged by the Van den Bergh serum reaction.

Further, the possible harmful effect of arsenic on liver tissue can be guarded against by the employment of the following technique :—

Patients should receive a meal, rich in carbohydrate, a few hours before the injection is to be made. The rationale is that, if the liver cells are filled with glucose, there is no room for noxious substances such as arsenic. If toxic manifestations should manifest themselves, the intravenous injection of 0·75 g of sodium thiosulphate on alternate days is useful, as a soluble arsenate is formed which augments the excretion of the drug.

CONCLUSIONS.

1. Malaria alone is as effective as the combined therapy in producing a remission of mental symptoms and changes in the serological reactions.

2. Tryparsamide is an important adjunct to malaria, acting as a general physical tonic, allaying motor restlessness, and thus making subsequent nursing through the pyrexial attack easier and less fraught with danger to the patient.

3. Tryparsamide is apt to induce serious complications, the more important being visual defect and hepatic upset. The drug should therefore be used cautiously and adequate safeguards and controls employed.

4. The word 'cure' being defined as a complete remission of mental symptoms, serological changes and accompanying physical signs, no case recorded in this series can be said to have been completely cured.

5. If we are ever to record a complete scientific cure of general paralysis, it will come from effectively following up these cases after discharge from lunacy certification, so that the ever-present syphilitic factor can be adequately treated.

I should like to express my thanks to the Medical Superintendent, Dr. E. F. Reeve, for his helpful criticism and interest, and also to Mr. H. Bean, chief laboratory assistant, who has undertaken the routine serological examinations.

Short Notes and Clinical Cases.

POST-MENINGITIC BLINDNESS, DEAFNESS, HYPOGENITALISM AND HYPOPITUITARISM.*

By WALTER M. KRAUS and S. BERNARD WORTIS, New York.

The sequelæ of meningitis and encephalitis in this case form a combination, record of which has not been found [1 2 3 4 5]. It seems certain that the entire picture is not due to a lesion located in one part of the brain, but to disseminated lesions. The hypopituitarism and hypogenitalism are probably dependent upon a single lesion.

The onset was at the age of six, after a severe attack of whooping-cough. Acquired syphilis is thus ruled out. Congenital syphilis probably played no part, though the patient's mother had several miscarriages and died of dropsy at forty-one. The father's Wassermann reaction is negative.

A sister had the same infection, whooping-cough, at the same time as the patient, and developed blindness, deafness, and diabetes mellitus. She died at the age of twenty-four of the last-named disease. The close resemblance to the patient's syndrome is interesting. Whether a congenital defect occurred in both, which determined the location of the infection, is to be considered.

Case Report: G. R., age 28 years, single, native of the United States, was first admitted to Bellevue Hospital, April 13, 1927, and discharged April 30, 1927. He was re-admitted February 7, 1928 and discharged May 21, 1928.

Family History: Parents married in 1895. Father was twenty-one years of age at time of marriage, mother eighteen. Mother had one sister and two brothers, all well. Father had four sisters and four brothers, all healthy.

Maternal grandfather died of myocarditis. Paternal grandfather died of cancer. Paternal grandmother died of Bright's disease.

Three children were born of the marriage. The eldest, a girl, died at the age of twenty-four of diabetes mellitus. She became blind at the age of ten. She was also deaf, but had no speech defect and no convulsions. The second child is the patient; the third child died at the age of six months of marasmus. There were also three miscarriages. The first occurred four months after marriage, spontaneous after strain. The second was spontaneous and occurred after a three months' pregnancy. The third occurred five years after the last child was born, and was induced. The parents deny venereal disease. The patient's mother had fainting spells after marriage. She died of dropsy in 1918.

Previous History: Patient was born February 11, 1899. Normal delivery. He weighed ten pounds at birth. He was well until the age of six, when he had pneumonia, whooping-cough, and 'meningitis of the brain,' all at the same time. He was in bed for one month.

* From the Neurological Division, Bellevue Hospital, Service of Dr. Foster Kennedy, New York.

From that time on he gradually lost his sight. It was almost entirely gone by 1916. Hearing was diminished progressively, but slowly from the age of fourteen until now. He had pneumonia and pleurisy in 1916. No sexual development or desire. No fits.

He attended the New York Institute for the Deaf and graduated three years ago.

Physical Examination : Fairly well developed. Stature of status lymphaticus. Female hair distribution. Scalp bald, skin dry. Kyphosis of the spine with overlying thick pad of fat. Broad hips. Striæ on abdomen. Atrophic small genitals. Few small epitrochlear glands palpable on both sides and in left axilla. Heart and Lungs : Heart not enlarged. Sounds are of good quality. No murmurs. Heart rate 110. Lungs : Breath sounds coarse, some slight dullness on percussion over the left chest anteriorly and in the mid-axillary line. Râles heard over both sides of chest posteriorly below. Abdomen : Negative. Extremities : No œdema.

Neurological Examination : Cranial Nerves : I. not tested. II : Almost blind. Can only recognize light and darkness. Fundi show threadlike pigmented strands on a yellowish background.

Note made on first admission, April 22, 1927. Posterior capsular cataract, 'salt and pepper.' Fundi changes with optic atrophy and marked narrowing of the blood vessels. The changes are those following a generalized chorio-retinitis. It simulates a retinitis pigmentosa, but the cataracts and central changes in the retina of the left eye particularly do not belong in this category. Etiology, probably luetic.

III, IV, VI : Pupils react to light and are equal and regular.

V : negative. VII : negative. VIII : Patient had otitis media at the age of fourteen, with resulting deafness in the left ear. Partially deaf in the right ear. IX, X, XI : normal. XII : normal.

Reflexes : normal. No Babinski response or clonus. Movement and coordination, normal.

Mental Status : The patient is dull mentally, but stable. He can use a typewriter and play the piano.

Laboratory findings : Blood Wassermann, negative.

Spinal Fluid : Clear, pressure normal, 8 lymphocytes ; globulin plus ; colloidal gold 5443311000. Wassermann negative.

Basal Metabolism : Plus 1 per cent., plus 3 per cent. Height 62·3 inches, or 158 cm. Weight : 134 lbs., or 61 kg.

X-ray Report : No pathology of the osseous system. Adenopathy of both roots of the lungs. No osteoperiosteal changes of the bones of the hands. Normal development.

Skull : No evidence of increased intracranial pressure. Bones of the vault are quite thick. Sella turcica is normal with somewhat exaggerated clinoid processes. No calcific deposits. Optic foramina are irregular, maximum diameter 4½ mm. Contour is normal.

Urine is negative.

Blood Chemistry : N. P. N. 30. Sugar 105. W. B. C. 8,200 ; polymorphs, 70 per cent. ; lymphocytes, 30 per cent. R. B. C. 4,600,000. Hb. 84 per cent. Temperature, pulse and respiration normal throughout.

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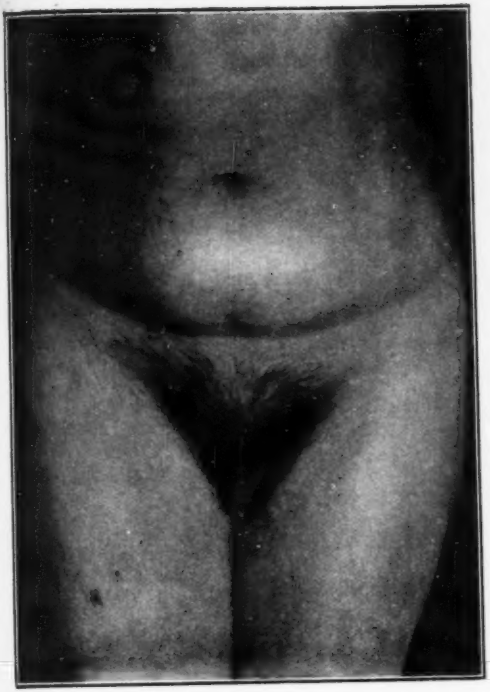

Showing small genitalia, striæ on abdomen, and scanty pubic hair with female distribution.

Lateral view of patient showing kyphosis of spine.

Posterior view of patient.

Anterior view of patient.

Critical Review.

ENCEPHALITIS AND SPECIFIC FEVERS.

BY

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The term 'encephalitis' signifies in the most general manner an 'inflammation' of brain substance, due to activity of micro-organisms, viruses, or toxins. It is in common usage for a large and heterogeneous variety of conditions, to not all of which can it legitimately be applied. Recent controversies have shown up prominently the uncertainties surrounding the conception of 'inflammation' itself, hence 'encephalitis' is doubly suspect. The old cardinal signs of rubor, calor, tumor, and dolor cannot be regarded as typical of inflammation in the neuraxis; to-day their place is taken, in respect of the nervous system, by parenchymatous (ectodermal) changes and by exudative, infiltrative, and proliferative reactions on the part of the mesoderm (vascular and connective tissues); and these features of histological response to foreign irritants undoubtedly constitute a kind of anatomical definition commanding general acceptance. But perplexities begin as soon as we try to discover the meaning of individual tissue-reactions or draw etiological conclusions from the histological syndrome.

Even if we restrict the expression 'encephalitis' to cases with recognisable mesodermal processes, no specificity attaches to their etiology: on the contrary, disease-conditions that are conspicuously diverse on the clinical side (such as poliomyelitis, epidemic encephalitis, rabies, neurosyphilis, nevertheless resemble each other more or less closely as far as conjunctivo-vascular tissue-response is concerned, though alterations of the neural parenchyma may be less uniform: moreover, one and the same toxi-infection often enough exhibits notable histological variations in different instances (cf. epidemic encephalitis without obvious 'inflammatory' evidence), and, there is reason to believe, at different stages of the same case. With such infections as tetanus, diphtheria, or typhoid fever parenchymatous change is paramount and mesenchymal modifications often negligible, or even absent.

From the standpoint of pathological anatomy it seems possible to distinguish several types of tissue-reaction all of which still pass under the heading 'encephalitis' and emphasise afresh its indeterminate nature.

1. Acute parenchymatous alteration of nerve-cells, toxi-degenerative in character, with hyperæmia and œdema, but with little or no vascular and connective-tissue reactions, and no hæmorrhages. This should correspond in reality to a toxicosis rather than an encephalitis.

2. Acute encephalitis of the genuine histological kind, with cellular infiltrates and exudates ; if with visible hæmorrhages, then ' acute hæmorrhagic encephalitis.'

3. Acute ' encephalitis ' of which the prominent if not as yet admittedly distinctive feature is perivascular demyelination, as observed in postvaccinal and some measles cases, and in some types of what is called ' acute disseminated encephalomyelitis.'

Whether these variants represent essential differences or not it is premature to discuss. There is something therefore to be said for the attitude of the clinician, who, accepting the classical symptoms of fever, malaise, headache, clouding of consciousness, and so forth (with or without focal cerebral signs), as indicative of ' inflammation,' includes under the caption of ' encephalitis ' all types of case in which the syndrome can be recognised. Unfortunately, however, in some forms it is never pronounced, while it may characterise others not appropriately designated by that name.

In the absence of aid from bacteriological science classification for clinical purposes becomes rather indefinite, and the uncertainty is accentuated by the fluctuating nature of present-day conceptions, as well as by the many still existing lacunæ in neuropathological knowledge. The subjoined scheme embraces types of encephalitis which from a clinical standpoint can be usefully distinguished, despite pathological obscurities.

1. Acute non-suppurative encephalitis.
2. Suppurative encephalitis.
3. Postvaccinal encephalitis.
4. Epidemic encephalitis.
5. Acute polioencephalomyelitis (Heine-Medin disease).
6. Acute hæmorrhagic polioencephalitis (Wernicke).
7. Acute disseminated encephalomyelitis.
8. Encephalitis periaxialis diffusa (Schilder).

Of these groups, perhaps only the fourth and fifth stand for nosological entities ; a variety of toxic or organismal agents is responsible for the first and second, while the nature of the third is still sub judice ; the sixth is probably not as specific as was once thought ; the seventh and eighth offer suggestive links with disseminated sclerosis.

Looking only at the first of the above categories, the clinician is aware that his diagnosis must always be fraught with uncertainty. When in the course of a known toxicosis or infection the patient develops general cerebral symptoms such as headache, fever, malaise, delirium or coma, with or without convulsions, and with or without focal signs such as aphasia, Jacksonian epilepsy, paralysis, and involvement of cranial nerves, the observer believes himself justified in assuming a diffuse or patchy encephalitis to account for them, and doubtless in some instances this is actually the case. But pathological examination has

proved many examples of this syndrome to have been derived not from encephalitis in the strict sense but from vascular states of thrombosis, hæmorrhage or embolism, or from a circumscribed or generalised serous meningitis. At present no means of making a definite pathological diagnosis intra vitam is at the clinician's disposal, nor, indeed, is it a simple matter to say histologically where 'encephalitis' ends or begins.

The situation is further complicated by ignorance of the actual viruses of various infections, their nature and classification, and the question whether this one gives rise (usually or constantly) to encephalitic reaction, that to vascular thrombosis or hæmorrhage, another to direct parenchymatous toxicosis, and the next to meningitis serosa.

Whether any socalled 'primary' encephalitis exists (apart from the polioencephalitis of Heine-Medin disease) is debatable. One of the reputed causes of residual infantile cerebral hemiplegia is an acute encephalitis of the Strümpell type (asserted by Gowers to be a "theoretical disease"), separable from both acute polioencephalomyelitis and the alleged encephalitis of the specific fevers. That some type or types of this kind—an encephalitis of unknown origin—do in fact exist must be admitted. But whether these, in their turn, can be distinguished from what is termed, comprehensively, acute meningoencephalomyelitis or acute disseminated encephalomyelitis is far from being settled. From time to time unclassified cases, singly or in small and local epidemics, of an acute nervous affection (in juveniles usually), describable on clinical and perhaps on pathological grounds as acute encephalitis, encephalomyelitis, or meningoencephalomyelitis, have been reported (Brain and Hunter, Gordon, Pette, Redlich, Martin, Brown and Symmers, Anderson). Their separation from some other kinds of encephalitis seems justifiable on the basis of absence of any recognisable specific or predisposing cause. Some of these cases have been described as 'acute disseminated encephalomyelitis' even though the topographical variations are considerable but without signs of dissemination, ranging from the usual picture of acute encephalitis to that of meningismus or meningitis, or of pure spinal myelitis. That they are distinct from the encephalitis variant of ordinary poliomyelitis is determined (e.g., in the Brain and Hunter series) by the simple fact of the spinal fluid being returned as normal (except perhaps for moderate protein increase), without cytological reaction, and by the negative result of animal inoculation experiments.

The 'encephalitis' of the acute fevers, exanthematous or otherwise, next requires examination.

1. Measles.—The 'nervous complications' of measles embrace cerebral and spinal symptoms of mild or severe degree, which are encountered in rather less than 4 per 1,000 cases (Boenheim). Beginning during the first week, as a rule, the syndrome is one of headache, mental clouding, meningeal irritation and perhaps convulsions; or of multiple focal invasion referable to cortex,

basal ganglia, cerebellum, and spinal cord; or of single localised lesions in cerebrum, cerebellum, or cord. Toxic psychosis represents another clinical type, while a narcoleptic syndrome in 'cerebral measles' is mentioned by Lust. Acute ascending spinal paralysis is known (Box). Papillœdema has been seen, and a moderate cytological and protein increase in the spinal fluid. Of some 125 cases (12 personal) collected by Ford, complete recovery, noted in all of the first type of syndrome mentioned above, occurred in only 39 of the remaining 116; the usual residua were hemiplegia with or without aphasia, cerebellar defect, and paraplegia. Transient paralyses were observed in a series reported by Aaser.

The pathology of the condition can be summarised as comprising hyperæmia, multiple minute hæmorrhages, and a characteristic demyelination round many of the small veins, with infiltration, in these zones, of lymphocytes or polymorphs; perivascular cuffing otherwise is inconstant; glial cells are often swollen, and the parenchyma suffers secondarily, sometimes severely. Thus the change is partly inflammatory, partly toxi-degenerative; an acute hæmorrhagic encephalitis may predominate (Turnbull, Winnicott and Gibbs, Musser and Hauser), or perivascular demyelination (Wohlwill, Greenfield).

2. Scarlet Fever.—The occurrence of nervous complications in scarlatina is rare, and pathological examination by modern methods even rarer. Aside from the general syndrome of 'encephalitis,' or of meningitis or meningismus, the commonest clinical symptom is hemiplegia with or without aphasia, and next comes a form of neuronitis or of peripheral neuritis. Amaurosis (possibly of uræmic origin) and optic neuritis have been described. Scarlatinal psychoses are not infrequent.

On the pathological side thrombosis, embolism, small hæmorrhages, meningitis, and encephalitis have in turn been reported, but only a very few cases have really undergone the essentials of present-day investigation (Rhein, Southard and Sims, Toomey and Dembo), and in these acute hæmorrhagic encephalitis was the finding. The encephalitis cerebelli of Schilder's case was merely a clinical diagnosis. The accompanying Table, modified from Rolleston, exemplifies the uselessness of guesswork if verification is not forthcoming.

Alleged Causes of Post-scarlatinal Hemiplegia in 73 Cases.

Uræmia	19	
Cerebral embolism ...	14	Verified p. m. in one case.
Cerebral thrombosis ...	10	,, ,, ,,
Cerebral hæmorrhage ...	8	,, ,, three cases
Encephalitis	3	,, ,, ,,
Cerebral atrophy ...	2	,, ,,
Cerebral sclerosis ...	2	,, ,,
Toxæmia	1	
Not stated	14	
	73	

3. Whooping-cough.—Relatively less uncommon in whooping-cough, nervous symptoms consist of hemiplegia, double hemiplegia, aphasia, bulbar affections, mesencephalic syndromes, and others, with perhaps a special tendency to visual troubles, e.g., optic neuritis.

Their basis, often considered hæmorrhagic (venous or arterial), due to paroxysmal coughing resulting in cerebral congestion, is stated by Neurath to consist rather of hæmorrhagic encephalitis; but according to the most recent studies (Husler and Spatz, Neuburger, Singer, Ford) the cardinal histological change is one of severe degeneration and loss of cortical cells local or diffuse, with moderate glial reaction on the part of astrocytes, oligoglia being in a state of acute swelling. In some places the gyri resemble a mere glial sponge. Mesenchymal alterations in both brain and meninges are minimal and scattered, or absent. The process, indicative of a toxi-degeneration, affects subcortical ganglia and cerebellum to a less extent, and white matter is practically uninjured. It is worth noting that in most of these instances the clinical syndrome was one of convulsions with rigidity. A lymphocytosis (200 per c.mm.) in the spinal fluid, with a small hæmorrhage in the occipital lobe, was nevertheless found by Jochims, and a hæmorrhagic meningoencephalitis by Rhein.

4. Mumps.—The occasional development of symptoms of a nervous kind in the course of mumps is an old observation, and not, in these days, rare; in 476 cases among soldiers nine were thus complicated (Haden), and it is stated that some 150 are on record. A meningeal reaction in the spinal fluid is found in nearly all such cases (Casparis, Feiling, Chauffard and Boidin, Dopter), but has also been noted frequently in the absence of meningeal or meningismal signs (Monod, de Massary). While the usual history of headache, fever, nausea, vomiting, neck rigidity and Kernig's sign, together with fluid pleocytosis, is suggestive of meningeal invasion, other clinical evidence perhaps points to an encephalitis. Thus among the symptoms observed in cases collected by Acker are unilateral fits, monoplegia, hemiplegia, aphasia, sensory disorders, and those of a toxic psychosis. In not a few instances only cerebral symptoms occur. Optic neuritis occasionally develops. As a rule nervous sequelæ appear as the parotitis is subsiding, but not always (Bedingfield).

Few necropsies have been held: in four fatal cases examined by Gordon (one with a spinal lymphocytosis of 6,800 per c.mm.) the only changes detected were scanty and variable lymphocytic infiltration of the pia and insignificant glial increase; in the medulla of one case slight cellular exudation had taken place. The same observer states he has produced fatal meningoencephalitis in a monkey by inoculation with the filtrate of a gargle from an ordinary case of mumps without nervous manifestations. Up to the present, then, little pathological evidence of actual encephalitis has been forthcoming, and this diagnosis rests almost entirely on clinical deduction; meningitis seems the usual basis for the nervous symptoms (Kaunitz).

5. Typhoid Fever.—The cerebral and meningeal complications of typhoid have been the subject of many communications since that of Gubler in 1860. According to a recent study of 3,000 cases occurring in epidemic form, neural types appeared in 4.8 per cent. (Garkawi). They may be regarded as general and diffuse, or local. In the former are placed a meningeal or meningocerebral group, with a semiology of headache, pains, motor unrest, tremors, Kernig's sign; and an encephalic group, with deep clouding of consciousness, 'twilight' mental state, amnesia, delirium, stupor, or more pronounced derangement like that of a toxic psychosis, with hallucinations or delusions. Among the latter are such symptoms as aphasia, hemiplegia, athetosis, paralysis or cranial nerves; optic neuritis is a rare occurrence. Mention must also be made of spinal and peripheral types, sometimes like that of a disseminated myelitis, or an acute ascending syndrome, or a limited atrophic palsy as in poliomyelitis.

Where nervous phenomena occur the spinal fluid is commonly but little altered, even in severe cases; no pleocytosis is found, and only a slight increase in protein, up to .05 per cent.; Eberth's bacillus is not seen. But in a minority the fluid is not quite clear; cells increase in quantity, and the bacillus can be cultivated from it. This variety has been described as pure 'meningotyphoid,' without intestinal signs (Cottin and Saloz).

The pathology is variable; it consists of a cerebral toxicosis of parenchyma, without inflammatory reaction (no infiltrates, no bacteria); or of a serous meningeal reaction with increased permeability. The encephalitis mentioned by Raschofsky does not conform in its entirety to our definition. In the case of focal manifestations, however, their usual basis is embolic, thrombotic, or hæmorrhagic (Osler, Williams, Parisot, Hruska, Hawkins, and many more). Transient cerebral symptoms doubtless result from the toxicosis already mentioned, more persistent symptoms from the other types of lesion.

7. Typhus Fever.—Symptoms similar to those which may follow typhoid have been met with in the course of typhus fever, the recrudescence of which during the War has been responsible for a number of useful studies. Both central and peripheral disorders are known; of 44 cases in a Polish epidemic hemiplegia with or without aphasia characterised 22, peripheral symptoms 13 (polyneuritis, brachial neuritis, sciatica, peroneal and tibial palsy); two cases of Jacksonian epilepsy occurred, and one suggestive of disseminated encephalomyelitis (Demianowska). Devaux's observations of 215 cases at Passy in Roumania may also be given, in tabular form, as follows:—

110 organic lesions	59	polyneuritis.
	46	hemiplegia.
	5	cerebellar syndrome.

70 functional disorders ... ...
- 27 difficulty in walking.
- 15 functional monoplegia.
- 8 deaf-mutism.
- 15 functional tremor.
- 4 camptocormia.
- 1 amaurosis.

28 asthenia, with neuralgia and emotional disturbance.

5 psychic disorder, with mental enfeeblement.

2 existing organic affection, aggravated by typhus.

The spinal fluid sometimes exhibits cloudiness, xanthochromia, heightened coagulability, positive Noguchi reaction, and a mainly lymphocytic pleocytosis (Danielopoulu, Paulian). The infective agent undoubtedly exhibits affinities for the nervous system; from the outset, or very soon after, the clinical picture is more or less typical of meningeal invasion, and equally soon, or in due course, encephalospinal and peripheral complications may develop. Except for benign forms, few indeed, if any, are the cases which do not manifest nervous symptoms.

In rapidly fatal examples of the affection intense hyperæmia of the meninges is found, with hæmorrhagic effusion in these and in the encephalon; foci of softening are sometimes produced in older cases. Histological studies (Wohlwill, Ceelen, Hassin, Wolbach) have shown the main features to consist of proliferative changes in the leptomeninges, diffuse vessel alteration throughout the brain, with endothelial swelling in capillaries and precapillaries, perivascular exudates, small pericapillary hæmorrhages, thrombosis, patchy arteritis, and regressive changes in the intima. In the grey matter, especially of the brain stem from midbrain to medulla, but also of the hemispheres and cerebellum, and to a less extent in the white, are found numbers of socalled 'typhus nodules,' which are invariable if not pathognomonic. They consist of perivascular collections of glial and less definitely of mesenchymal (adventitial, endothelial, polymorphonuclear, rarely lymphocytic or plasma) cells in confused abundance; the central vessel or capillary is usually thrombosed yet may be seemingly normal. The glial elements include microglia and astrocytes. So compact are these nodules that it is possible a syncytial formation occurs. Massing solely of neuroglial tissues may also be seen, taking the shape of glial stars, rosettes, or ray-appearances (Spielmeyer, Nicol). Parenchymatous lesions are confined largely to acute ganglion-cell change of the Nissl type, with dendritic swelling and not infrequent neuronophagia. The rickettsia itself is traceable in the endothelium of cerebral vessels and sometimes in the typhus nodules. Apart from these, perivascular exudates embrace the usual components of lymphocytic, plasma, and compound granular cells.

The peculiar mixture of glial and mesodermal proliferative reactions constituting the nodules has been taken by some for a special variety of encephalitis; but Pollak considers it similar to socalled 'salvarsan encephalitis'

and not to be sharply distinguished from other toxi-infective processes, a view supported by Hassin. By intraperitoneal injection of the Weil-Felix bacillus analogous lesions have been produced in the guineapig brain (Friedberger and Schroder).

8. VARIOLA.—Detailed information as regards the nervous complications of smallpox is difficult to obtain, and precise pathological data are extraordinarily meagre. Among the symptoms of 13 cases collected by Glanzmann from the literature mention is made of aphasia, ataxia, hemiplegia, and paraplegia. A Landry type of acute ascending paralysis was a feature in another case (Eichhorst).

The pathological picture in Spiller's case closely resembled that of acute poliomyelitis; in Eichhorst's, that of acute disseminated meningomyelitis. As far as I can discover, none of the pathological investigations is of recent date or modern in technique, and little reliance can be placed on some at least of them. There is at present no justification for assuming the basis of the clinical syndromes to be an encephalitis, and any theory of their origin is largely conjectural.

9. VARICELLA.—Not much more is known of nervous chickenpox than of smallpox. Attention, it is true, is being paid to the subject, but less speculation is wanted, and more pathological research.

Chorea, tremor, hemiplegia, cerebellar ataxia, paraplegia, aphasia or dysphasia, optic neuritis, polyneuritic syndrome, meningeal syndrome, and acute ascending paralysis, are among the remarkable clinical diversities attributed to the affection (Wilson and Ford, Waldman, Winnicott and Gibbs, Galli, Krabbe, Chavernac, Wharton Smith, Crouzon and Liège). Commencing some five to fifteen days after onset of the varicella, these nervous phenomena stand in no relationship to its severity. Lymphocytosis and protein increase have been found in the spinal fluid.

No pathological investigations of any value are on record, so far as I have been able to discover. It is clearly improper to assume an encephalitis solely because of the occurrence of cerebral symptoms, aside from the predominance of meningeal, spinal, and neuritic manifestations in perhaps a majority of instances.

10. DIPHTHERIA.—Since peripheral lesions undoubtedly characterise most cases of nervous diphtheria it is perhaps not necessary to proceed further with their discussion in this place. Although for the somewhat rare hemiplegia and other cerebral symptoms of the disease an embolic origin is usual, some evidence suggests the possibility of a 'central neuritis' akin to encephalitis.

Any neurologist of critical mind who studies the information here collected from a large number of scattered sources must be impressed with both the clinical and the pathological heterogeneity of the effects on the neuraxis of the diverse noxæ of the specific fevers and exanthems; and he must admit that it is quite illegitimate to assign these effects, one and all, to 'encephalitis.'

This pathological term is getting overweighted, and, as we have seen, is applied in circumstances where it is perhaps not histologically justified. It is no more in reality than a 'pathological syndrome'—it has no more specific etiology than any 'clinical syndrome'; and a study of the pathology of the various fevers proves that in numerous instances 'encephalitis' in a strict sense is conspicuous by its absence.

Further, it may be seen pathologically in conditions which are brought about not by biological but by chemical agencies. According to the English Salvarsan Committee's Report (1922), about 50 per cent. of 'salvarsan deaths' in all countries have been due to a 'hæmorrhagic encephalitis,' characterised histologically by abundant small perivascular hæmorrhages, and by thrombosed capillaries with minute pericapillary necrosis; on occasion hyaline thrombi are found. In other salvarsan deaths, however, only hyperæmia and œdema of the brain have been noted. Multiple minute capillary lesions of this kind are known also in connexion with carbon monoxide and phosgene gas poisoning. And there are many other chemical intoxicants whose action on the nervous system results in the appearances of one or other type of 'encephalitis,' as described at the outset.

The present state of knowledge, therefore, precludes any attempt to correlate encephalitis and specific etiological agents, and compels us to suspend judgment. As far as can be seen, the evidence which some take to suggest that certain types of virus or noxa are associated with certain forms of encephalitic reaction is in reality insufficient. At any rate, the whole subject needs continuing and intensive investigation.

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Editorial.

PSYCHOTHERAPY: MAGIC OR EDUCATION?

UNTIL recently the main problem which confronted us in the field of psychotherapy has been the etiology of the neuroses. An interesting corroboration of this view is to be found in the report of the B.M.A. committee, which for two years has been deliberating upon the various problems raised by the rapid growth of medical psychology. For it is concerned almost entirely with a theoretical disquisition on Freud's researches into the etiology of neuroses, leaving the thorny problem of therapy practically unconsidered. This is intelligible since intellectual comprehension necessarily precedes effective practice. But although intellectual recognition may be enough for the investigator it is scarcely enough for the patient, Freudian doctrine notwithstanding. This phase of psychotherapy marks only the beginning of the task confronting doctor and patient. The knowledge of the sources of his difficulties may give the latter such a new sense of relief from an unbearable pressure that he will gladly grasp at the illusion of cure contained in this temporary release. But the cure of a neurosis leaves its etiology far in the background, and reaches forward toward a radical re-education of the patient. There is always a lurking desire on his part to escape this ordeal of re-education, and only too often this desire is reinforced by a degree of laziness or unreadiness on the part of the doctor.

Every physician who has had direct experience with tuberculous subjects knows well that however impressively he confronts the patient with full knowledge of his disease, and however explicit he may be concerning the indispensable rules of tubercular hygiene, there are few who have either the discipline or the intelligence to establish a new regime of life, which involves deliberate conquest over immemorial human habit, unless they are schooled to it by strict supervision. It is a lugubrious and solemn fact that men and women are so constituted as to experience considerable difficulty in taking independent responsibility for their actual condition, whether their affection be psychical or physical. It would seem that at bottom we still possess the magical mentality of primitive man, whose magical explanation of disease also demands a

magical cure. Miracle-working, faith-healing, the application of rays, heat, cold, electricity, sea-water, mud-baths or any other like measure, which the vogue of the day chances upon, are plausible to the mind just in so far as the inertia of primitive mentality provides an 'all-too-human' justification for this paradisaic state of faith. The myth of paradise is a perennial truth. But the dreams and illusions which are the very pith and substance of our instinctual processes are deceptive only because of our profound unwillingness to interpret them. Dreams, as such, are nothing but wish-fulfilments. This is the misleading half-truth, it may be contended, of the Freudian doctrine. Blood, as such, is nothing but a collection of cells existing in a plasma of a certain constitution. Clearly any science which is concerned with the living organism would be almost meaningless if it regarded one vital process of an organism as a per se phenomenon quite apart from its function of relation to the whole. Faith in the physician's power to cure, like the faith in the priest, the medicine man, the father, is a primal instinctual attitude based on an age-old dream, and this dream must be interpreted as an indispensable condition of readiness on the part of the patient for the specific education which his morbid or infantile condition requires. The way in which the physician responds to this faith will exhibit the degree in which he also is imbedded in the magical mentality of primitive man. We can trace the gradual evolution of psychological realism from the laying-on of hands of the faith-healer and the exhibition of rays, baths, belts, rest-cures and the like, up to the belief in hypnotism, suggestion, abreaction, persuasion, hortation, auto-suggestion and finally psycho-analysis, until at last we are actually on the threshold of realising that the problem is fundamentally an educational problem. The principles of psychological or mental hygiene have to be laid down and accepted as every bit as necessary in the prevention of psychical maladies as physical hygiene is indispensable for the prevention of tuberculosis and other social diseases.

One of the most important aspects of preventive mental hygiene has to do with a change in our attitude toward family life. Medical science had to use the full weight of its authority in order to ensure the isolation and segregation of the tuberculous patient from the dangerous proximities of the family circle. Analytical searchlight has now revealed beyond any doubt that the toxins of neurosis may be generated within the sacred

precincts of the family, and so jealously is this social fortress sometimes guarded that it will require the full power of enlightened medical opinion to ventilate its ancient recesses with the pure air of common sense. To modern taste it is hard to realize that the fragrant perfumes, regarded nowadays as a feminine elegance, were actually required by our Elizabethan forefathers to mask the insanitary state of their underlinen, their teeth and their skins. It may be that to the eyes of our descendants the sentimental idealism with which we are in the habit of disguising the actual state of our intimate personal relations for the purpose of preserving the sanctity of marriage and the family will appear equally curious and distasteful.

It is all too easy for a human society to exalt, even to the point of ostentation, the all-knowing wisdom of Providence in order to divert attention from a state of ignorance and incompetence, and there is no doubt that the indulgent idealism which has pervaded our intimate emotional connexions has served to deflect scientific investigation from an objective study of the nature of human relationships and into the cause of the toxins there generated. The education of the neurotic inevitably leads to this investigation since it is in the realm of human relationships that his sickness is most manifest. The psychological doctor has no more justification therefore for washing his hands of this problem of educational therapy on the grounds that it encroaches upon the forbidden territory of intimate feeling and individual morality than has the specialist in tuberculosis to disclaim his educational responsibility on exactly the same grounds.

Agreed that it is no part of the doctor's task to dictate to a man how he shall conduct his life. But it is certainly expected of medical science to formulate those general hygienic principles upon which the ideal of health and well-being is based. The study of the etiology of neuroses has definitely extended the province of hygiene to include the previously tabooed sphere of human relationships.

The Freudian method of reductive analysis has a clear therapeutic value in this sphere since it aims at an exhaustive survey of the patient's relations to his parents and immediate circle. But it appears to miss the full requirements of the psychotherapeutic objective, in so far as the analyst does not accept responsibility for educating his patient by the very means which the transference provides—viz. to build up a concept of relationship in which self-respect is won by an

impersonal and generous criticism of all the unconscious claims and pretensions which in ordinary family life may tend to turn the milk of human kindness into gall. Through this conscious use of the transference the patient can experience for the first time perhaps a wholesome and poised relationship in which a developing human being can live and thrive.

When the doctor recognizes his patient's relationship to him as one of reciprocal responsibility in which it is his task to lead the patient to a new attitude toward the problem of human relationships a stage of psychotherapy never before attempted has been reached. It is at this point that Jung enters the field as a pioneer and proclaims that no psychotherapist is worth the name if he is not ready to offer his own life as proof of the principles he is trying to convey to the patient. The patient has perforce to re-enter life under the ægis of superior wisdom on the part of the doctor. The task of educating neurotic patients is without argument a thankless task when it is undertaken, as with tuberculous patients, from the level of assumed normality, since it largely consists in facing the patient with those very tasks and obligations which it has been his lifelong policy to evade. Psychologically the level of assumed normality means that the physician is in the position of educator by virtue of the fact that he himself has already solved the essential problems of his own life in both his personal and his public capacity.

Among the many uncertainties of psychotherapeutic practice one fact remains unchallenged, that is, that the assumed superiority of the physician over the patient cannot be merely a 'guiding fiction,' but must exist in reality. Otherwise the whole structure of the relationship between doctor and patient collapses like a house of cards. The neurotic has an uncanny flair for scenting the weak places in the doctor's character, and if one of the latter's weaknesses is to save his own face by hiding behind the mask of professional infallibility he will find that all his attempts to transform his patient are met by ironic incredulity. Most of the irritation exhibited by doctors towards their neurotic patients is traceable to the fact that however socially inadequate or inferior the latter may be, yet in the field of personal integrity they cannot be bluffed.

The natural effect of this psychological perspicacity on the part of the patient is for the physician to intensify his professional intangibility, with the result that the resistance of the patient is likewise intensified. Thus an impasse is almost

certainly reached. The cure for this evil state of affairs is not to rail at the stupidity of the patient or the infantilism of the transference, but for the educator to lay aside his professional superiority and bring to the solution of his own personal problems the same medicine he is offering to his patient. As soon as the doctor descends from the professional rostrum and is able to convince the patient that he teaches no theory or principle which he has not first tried out in his own life, the relation with the patient is transformed. The educator then discovers that his pupils are able to risk and to venture in a new spirit. They are willing and free to transform their lives even at the cost of suffering, when they perceive that the physician believes in evolution with sufficient passion to test it out without flinching in his own life. Thereby the educator also becomes educated and the principles of psychological hygiene which he is then able to teach are neither modern forms of ancient magic, nor the flimsy precepts of the man with good intentions, but possess the concrete validity of experimental findings.

Abstracts.

Neurology.

NEURO-ANATOMY AND NEUROPHYSIOLOGY.

[1] **The facial paths for superficial and deep sensibility** (Le vie delle sensibilità superficiali e di quelle profonde per la faccia).—G. Roasenda. *Giorn. R. Acc. Med. Torino*, 1928, xci, 163.

While it is perhaps generally believed that the fibres conveying impressions underlying deep sensibility from the face run not in the trigeminal but in the facial nerve, Dr. Roasenda criticises this view, basing his studies on cases of trigeminal neuralgia submitted to alcoholisation of the Gasserian ganglion. He has tested deep pressure pain, vibration sense, muscular sense and sense of position, employing for the last of these the electric current. In four cases in which superficial anæsthesia was produced by alcohol injection he found simultaneous involvement of deep sensibility in each instance. Further, in three cases of Bell's facial paralysis he failed to discover any alteration in the latter variety of sensation.

Since these conclusions are contrary to those of other observers and since the theory of individual variation is unsatisfactory, it is apparent that fresh investigation is desirable. S. A. K. W.

[2] **On the veins of the diploe.**—G. Jefferson and D. Stewart. *Brit. Jour. Surg.*, 1928, xvi, 70.

This finely illustrated paper is of considerable importance to the neurologist. It shows conclusively that by modern technique the veins of the diploe stand out clearly in X-ray photographs of the skull and that they may often cause misinterpretation. They may easily be taken by the unwary for fractures. Pictures are given, inter alia, of a mass of diploic veins incorrectly diagnosed as a "stellate crack." In cases of intracranial tumour the middle meningeal grooves are often conspicuous for their clarity and breadth. J. V.

[3] **Some observations on the sympathetic innervation to the skeletal muscles of goats.**—S. S. Tower and Marion Hines. *Amer. Jour. Physiol.*, 1929, lxxxvii, 542.

One fore limb, in a series of five goats, was deprived of sympathetic innervation either by sympathetic ramisection after the manner of Royle, or by complete

resection of the cervical sympathetic. Normal posture, gait, and tonus were then repeatedly examined for a month or more. The animals were subsequently decerebrated. At no time was any difference as between fore and hind legs discoverable. Decerebrate rigidity developed simultaneously in the two fore legs, and was equally maintained.

The conclusion is drawn that tonus, as a component of total skeletal muscular function, is in no direct way dependent on an intact sympathetic innervation of muscle. Thus the literature records are almost overwhelmingly in disagreement with Hunter and Royle. J. V.

NEUROPATHOLOGY.

[4] **The nervous system in rats fed on diets deficient in vitamins B_1 and B_2.**—R. O. Stern and G. M. Findlay. *Jour. of Pathol. and Bacteriol.*, 1929, xxxii, 63.

1. Rats fed on a diet deficient in both vitamin B_1 and B_2 exhibit only slight chromatolytic changes in the ganglion-cells of the cord.

2. Rats fed on a diet deficient in vitamin B_1 exhibit the same changes but to a greater extent for the same duration of life. In addition, when symptoms of paralysis are of long standing, early degeneration may be found in the myelin of the peripheral nerves.

3. The histological changes found in the nervous system of rats fed on a diet lacking in vitamin B_2 consist in swelling and vacuolation of the anterior horn cells of the spinal cord with the deposition in them of lipochrome pigment, a noticeable increase in the surrounding satellite cells, and an increase in the number of π-granules in the peripheral nerves.

These findings bear some resemblance to the lesions of the nervous system in human pellagra, while skin lesions found in the same series of rats resemble very closely those of the same disease of man. J. V.

[5] **A syndrome in the rat resembling pink disease in man.**—G. M. Findlay and R. O. Stern. *Arch. of Dis. in Childhood*, 1929, iv, 105.

The experiments brought forward fully confirm the findings of Boas that when dried egg-white is fed to young rats as the sole source of protein there results a syndrome characterised by nervous and cutaneous symptoms. The fact that the same disease may be produced by feeding the mothers on dried egg-white as the sole source of protein suggests that in the drying process some essential dietetic factor is destroyed in the egg-white, rather than that a toxic substance is formed. If the existence of a hitherto unknown dietetic factor is postulated, there is a close analogy with the known occurrence of the deficiency diseases beriberi and scurvy in infants fed at the breast.

Investigation of the pathological changes occurring in young rats fed on dried egg-white shows that very characteristic changes occur in the central nervous system, which still further emphasises the similarities of the condition in the rat to Swift's disease in man. These may be thus briefly summarised :—

1. Both diseases occur in young animals. Swift's disease has never been recorded in adults, while in the adult rat it is only after from three to five months that cutaneous lesions can be produced.

2. The diseases may occur on a diet of mother's milk or a ration containing an ample supply of the known vitamins.

3. The clinical symptoms of both are nutritional, nervous, and cutaneous.

4. In rats there is a characteristic 'kangaroo' position, in children a knee-elbow position.

5. In rats and children there is a curious mousy odour.

6. Death is often due to an intercurrent bronchopneumonia.

7. There is no evidence that the diseases are due to an infection with bacteria or ultramicroscopic viruses.

8. The pathological changes in the skin and nervous system are similar.

Although the possible formation of a toxic substance during the drying of egg-white cannot be excluded the experimental evidence strongly suggests that for the normal nutrition of both young and adult rats a factor is required in addition to the known vitamins. If Swift's disease in man is identical with this new syndrome in the rat then this new factor must also play a part in human nutrition. AUTHORS' ABSTRACT.

[6] **Some factors in the 'mechanical theory of epilepsy,' with especial reference to the influence of fluid, and its control, in the treatment of certain cases.**—TEMPLE FAY. *Amer. Jour. Psychiat.*, 1929, viii, 783.

THE mechanical theory of epilepsy has had many exponents in one form or another. Among the firm believers that some extracerebral factor was concerned, Kocher can be mentioned. He looked upon increased intracranial pressure as perhaps the cause. Alexander favoured increase in fluid over the cortex. Dandy has insisted on the existence of some organic basis for the attacks. Elsberg and Pike considered the importance of increased intracranial pressure and suggested that decrease in intracranial pressure consequent upon the diminution of fluids taken might explain the relief seen in starvation treatment. Foerster considers pressure and increased fluid as a factor associated with irritation from arterial pulsation. Mixter suggests the probable underlying cause is due to failure of subarachnoid fluid absorption. Lind believes cerebral anæmia from compression to be the cause of seizures in the presence of intracranial pressure. Swift believes that constriction due to distortion of the large venous outlets (sigmoid and lateral sinuses) may produce

congestion of the venous flow from the cortex, and disturbance of cerebrospinal fluid absorption, with consequent increase of fluid pressure. He has shown distortion of these structures and abnormalities in their development. It is impossible because of meagre knowledge concerning many of these points to do more than indicate the factors which may be concerned in the mechanical consideration of the subject. The addition of two new facts may modify in part, as well as further substantiate the mechanical theory of epilepsy: (1) The establishment of a characteristic as well as variable pathology demonstrable in the Pacchionian bodies so far studied in 150 brains; (2) the fact that prolonged dehydration may be carried out on certain patients for a period of a year without deleterious effects to their general health and that in the presence of this controlled dehydration this small group of patients suffering from generalized convulsive seizures with loss of consciousness have become attack-free and have remained so, as long as the fluid-intake restrictions established for them have been maintained. Those suffering from slight attacks or petit mal have not been benefited. C. S. R.

[7] **Studies in epilepsy. VI. Factors affecting convulsions induced in rabbits.**—W. G. Lennox, R. Nelson and W. P. Beetham. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 625.

Eighty-seven rabbits were used for experiments undertaken with the object of inquiring to what extent factors which are known to modify convulsions in patients have a similar effect on convulsions experimentally induced in animals. Two convulsants were used intravenously: thujone, made from oil of wormwood, and homocamfin, a preparation of camphor.

It was found that the incidence and severity of the reactions did not increase in proportion to increase in the amounts injected. When the convulsant dose was repeated within an hour, the resulting convulsion was less frequent and severe than the first; the larger the dose used, the greater was the difference between the first and second reactions. Preliminary medication with phenolbarbital sodium caused reduction in convulsions only when the dose, based on weight, far exceeded that used clinically. Reduction in severity exceeded reduction in incidence. Rabbits which were made to fast did not show a reduction in the carbon dioxide combining power of the blood. Those which were fed on butter and olive oil showed reduction, presumably because of the diarrhœa induced. In both groups of animals there was some reduction in the frequency and severity if the convulsant drug was injected intravenously, but not if into the heart. Of the rabbits' reactions, the severity was not related to the concentration of bicarbonate in the blood. Following the injection of amounts of lactic acid sufficient to reduce the bicarbonate greatly, the animals did not have convulsions. Injections of acetone into the heart

did not consistently reduce the bicarbonate in the blood or the severity of the attacks. The injection of sodium bicarbonate did not have a definite effect on the induced convulsion.

The use of a convulsant drug is such a powerful agency that only profound changes in body metabolism will modify the resulting convulsions. Therefore, it is hardly a suitable means for studying factors which might affect the occurrence of seizures in patients. R. M. S.

[8] **Communicating hydrocephalus.**—Joseph H. Globus. *Amer. Journ. Dis. Child.*, 1928, xxxvi, 680.

An account is given of five cases of hydrocephalus in infants with the findings at autopsy. In two instances a complete obliteration of the subarachnoid channels at their point of origin from the cisternæ was found; further, no evidence of an old inflammatory condition was present. The author therefore contends that the hydrocephalus was due to a congenital defect in the opening up of the sub-arachnoid channels. In stressing this argument he takes the presence of other congenital anomalies in the second case as favourable evidence. In a third instance hydrocephalus was of later origin and at post-mortem no inflammatory changes were found; he supposes that only a partial opening up of the subarachnoid spaces had occurred. The other two cases had definite etiological factors such as meningococcal meningitis and trauma. Nothing new has been added to the knowledge of hydrocephalus in this paper and the interest rests in the confirmation of the work of Dandy and Weed.

E. A. C.

[9] **Massive cerebral hæmorrhage consecutive to thrombotic cerebral softening** (L'hémorragie cérébrale massive consécutive au ramollissement cérébral thrombosique).—J. Lhermitte and N. Kyriaco. *L'Encéphale*, 1928, xxiii, 508.

Among the more common causal antecedents of cerebral hæmorrhage must be reckoned thrombotic softenings of the brain. In some cases, reported by Globus and Strauss, there was pathological evidence that hæmorrhages developed in areas of the brain which had previously been the seat of thrombotic necrobiosis. The present writers record two cases in which clinical evidence of such a sequence was also present and was confirmed by pathological examination of the brain. They do not suggest that this sequence is constant but rather that it is more common than has often been supposed.

The mechanism of the process is scarcely discussed by the authors, but they support the modern view that cerebral hæmorrhages are due not to *miliary* aneurysms but rather to *dissecting* aneurysms, and it is probable that in the formation of these some part is played by complete or incomplete thrombosis. J. G. G.

[10] **New researches on senile plaques** (Nouvelles recherches sur les plaques séniles).—G. MARINESCO. *L'Encephale*, 1928, xxiii, 697.

THIS article is not only a critical survey of recent investigations of senile plaques by means of new silver staining methods, but also gives a detailed study of those found in two brains, one that of a woman of 90 years, the other from a patient aged 45 who had suffered from polyneuritis and mental disturbances. The author insists on the great variety in the appearance of senile plaques. Scarcely two can be found which exactly resemble one another, and the variations in the relative preponderance of cells of neuroglial and microglial origin which take part in their formation are still more striking. In the younger forms the microglia is predominant. In later forms large neuroglial spider cells are seen to surround the plaque. But neither of these cell types plays more than a purely secondary role in its formation. This is directly due to a local metabolic disturbance in the nervous tissue itself, whereby certain lipoid substances which have a special affinity for silver are precipitated out from the lipo-protein complex of the nervous parenchyma. The presence of these substances stimulates the phagocytic activities of the microglial cells which migrate into the centre of the plaque, and thereafter often themselves undergo degeneration with the formation of an amyloid substance. In this way the central nucleus of the plaque is constituted. The microglial cells also proliferate round the plaque; their processes swell and are often found to contain fatty granules. At a later stage the fibrous neuroglial cells hypertrophy, surrounding it with thick firm processes.

The author also discusses the vexed question whether the nerve fibres found within the plaques represent the degenerated remains of pre-existing fibres or are new fibres which have passed into it since its formation. He finds that the evidence strongly supports the view that there is an actual new formation of nerve fibres round it, and that some of the new fibres attempt to penetrate into it, but there, finding conditions unsuited to their further passage, they become arrested.

Several technical methods specially adapted for demonstrating the details of the plaques are described in this article, which should be consulted in the original by all who are interested in the subject. J. G. G.

[11] **Calcifications in the choroid plexus with consideration of their significance.**—E. SACHS and C. WHITNEY. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 533.

THE authors report the case of a microcephalic idiot who on X-ray examination showed extraordinary calcification in the choroid plexuses. There were no positive neurological signs and nothing could be found in the general metabolism to indicate the mechanism which favours abnormal deposits of either calcium or bone in the choroid plexuses. R. M. S.

SENSORIMOTOR NEUROLOGY.

[12] **Systematized amyotrophy in epidemic encephalitis** (Les amyotrophies systemisées dans l'encéphalite épidemique chronique).—A. WIMMER and AXEL. V. NEEL. *Acta Psychiat. et Neurol.*, 1928, iii, 319.

THE conception of a postencephalitic variety of muscular atrophy strikes an unfamiliar note in English neurology. Wimmer's series of 20 such cases however have in certain instances been confirmed pathologically. His cases fall into five groups:—the 'bilateral distal,' the 'proximal,' and the 'hemiplegic' varieties, a bulbar-myasthenic type and lastly a form resembling amyotrophic lateral sclerosis. Parkinsonism was present in four cases only. Postmortem examination was available in three of the series, the changes comprising an outfall of cells from the anterior horns of the cord with degeneration of the pyramidal tract. Hyaline changes were found in the blood-vessel walls, and the Virchow-Robin spaces were infiltrated with lymphocytes. A certain amount of scepticism is legitimate with regard to the diagnosis in many of Wimmer's cases, the evidence of an encephalitic origin being extremely slender.

M. C.

[13] **Encephalitic respiratory sequelæ.**—H. G. WOLFF and W. G. LENNOX. *Jour. Nerv. Ment. Dis.*, 1928, lxviii, 337.

THE first patient, in addition to respiratory seizures of rapid breathing without apnœa, had generalized convulsive attacks occurring independently of, or following, the respiratory disturbance. The other two had paroxysms of apnœa in full inspiration with spasm of the respiratory muscles, followed by loss of consciousness and convulsive movements.

The authors believe that convulsions produced in experimental animals by greatly increasing intrathoracic pressure are comparable to the symptoms observed in the last two patients. Clinical observations upon one of these patients seemed to show that the intensity of respiratory seizures, like the convulsions occurring in other conditions, could be altered by changes in the chemical composition of the blood.

R. G. G.

[14] **Schilder's encephalitis periaxialis diffusa** (Encéphalite periaxile diffuse: type Schilder).—WALTER M. KRAUS and ARTHUR WEIL. *L'Encéphale*, 1928, xxiii, 775.

THE case of Schilder's disease reported here is of interest especially on the clinical side. The illness started abruptly, the patient fell in the street, was unable to rise, and was then found to be extremely ataxic in both upper limbs. Periods of improvement were followed by periods of regression for 13 years, during which intention tremor, nystagmus and ataxia were the most prominent early symptoms, and were later followed by certain evidences of aphasia and right-sided Jacksonian fits. The patient finally died in coma. Various

diagnoses including neuritis and hysteria were made. The possibility of disseminated sclerosis was considered but rejected. Post-mortem the macroscopic appearances of the brain were typical of Schilder's disease, the white matter especially of the frontal and occipital lobes on both sides being grey and sclerosed, with preservation of the cortex and of a thin subcortical layer of white fibres. In stained sections all parts of the brain were found to be affected. In the pons and medulla and cerebellar peduncles localised areas of degeneration were also found. In the cord in addition to degeneration of the pyramidal tracts, two other areas of degeneration were seen, one in the anterior tracts on one side of the cervical cord, the other in the dorsal columns in the thoracic region. In the degenerated areas the axis-cylinders were better preserved than the myelin sheaths. Apart from the presence of numerous corpora amylacea throughout the brain and spinal cord no other lesions of special interest were found. J. G. G.

[15] **Intracranial aneurysms.**—B. R. SHORE. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 607.

Two cases of ruptured aneurysm are reported, one of congenital origin and the other of the arteriosclerotic type. Each patient died as the result of intracranial hæmorrhage, and in each the gradual and progressive character of the cerebral symptoms, combined with evidence of irritation of the nerves at the base of the brain, was sufficient at least to suggest a clinical diagnosis of ruptured intracranial aneurysm. R.M.S.

[16] **Gradenigo's syndrome** (Sindroma de Gradenigo com paralisia do facial dois anos apos o trauma, etc.).—M. ALBERNAZ. *Revista Oto-Neuro-Oftalmol.*, 1929, iv, 117.

GRADENIGO'S syndrome consists of (1) acute otitis media, (2) severe temporoparietal pain, and (3) convergent strabismus, from paralysis of the external rectus. It is produced by lesions situated in the petrous temporal, lateral to the sella turcica and in the vicinity of the cavernous sinus. The case here reported was of traumatic origin, from a revolver bullet, which lodged in the region mentioned. It was complicated by a facial paralysis. Operation resulted in relief of the symptoms, but a cerebral abscess developed and caused death. Photographs and X-ray pictures show the exact site of the lesion. S. A. K. W.

[17] **Idiopathic narcolepsy, cataplexia and catalepsy associated with an unusual hallucination. A case report.**—S. BROCK. *Jour. Nerv. Ment. Dis.*, 1928, lxviii, 583.

A SURVEY of literature, more particularly of Adie's and Wilson's papers, is given; then follows a full report of a case showing sleeping attacks, falling,

and attacks of powerlessness associated with hallucinations of the patient's mother or brothers kneeling beside him, sometimes giving him calm and kindly advice. R. G. G.

[18] **A cavernous angioma of the mesencephalon** (Di un caso di angioma cavernoso del mesencefalo).—C. DEMEL. *Il Cervello*, 1929, viii, 1.

IN the case of a man of 51 who died of lobar pneumonia, a cavernous angioma of the superior corpora quadrigemina was an accidental finding at autopsy. A description of the histological character of the tumour is followed by a discussion of a number of analogous cases from the literature. In view of the site of the lesion it is regrettable that no clinical examination of the nervous system appears to have been made. S. A. K. W.

[19] **On the pathogenesis of ophthalmoplegic migraine.**— HOLGER EHLERS. *Acta Psychiat. et Neurol.*, 1928, iii, 219.

THE association of migraine with recurrent paralysis of the oculomotor nerve was first described by Gubler in 1860 ; the name 'migraine ophtalmoplégique' was suggested 30 years later by Charcot. In an excellent review of this syndrome, Ehlers emphasizes the long duration of the history and the ultimate permanence of the condition in many instances. Opinions are divided as to the lesion in respect of the third nerve ; the strict unilaterality of the signs and the absence of involvement of other cranial nerves suggest the peripheral portion of the oculomotorius as the probable location. The close anatomical association of the third nerve with the posterior cerebral artery within Tarini's fossa (the fossa interpeduncularis) leads Ehlers to the following conception of ophthalmoplegic migraine. Local vasomotor disturbance is the probable pathogenic agent in migraine ; the posterior cerebral artery is the vessel supplying that part of the cerebrum to which the teichopsia and the hemianopia are referable. It is probable therefore that an intermittent vascular change in the posterior cerebral artery is responsible. Dilatation of this artery will press upon the adjacent third nerve and so interfere with its function (cf. cases of oculomotor palsy due to pressure of aneurysms of the posterior cerebral artery). The author admits that his hypothesis is not applicable to those rare cases of ophthalmoplegic migraine in which some ocular nerve other than the third is implicated. M. C.

[20] **Wilson's disease** (Sulla malattia del Wilson).—L. DE LISI. *Riv. pat. nerv. e ment.*, 1929, xxxiv, 1.

THIS is a superb communication of some 162 pages, based on a personal case of a typical kind, and beautifully illustrated. Since the appearance of Hall's monograph there has been nothing to compare with it for its wide conspectus of the general problems arising out of the subject and for its critical discussion

of the phenomena of the malady. The reader will find here a complete investigation of semiology, pathology, pathogenesis ; of the relation of the sympathetic system to the condition ; of ' postencephalitic Wilsonism ' (sic) ; of the kinship between it and Westphal's pseudosclerosis, as also torsion-spasm. All this is admirably done. The writer points out, as have others, that Alzheimer's atypical glia cells are not pathognomonic of any particular disease. He concludes that pseudosclerosis and Wilson's disease are two types of the same affection, though distinguishable. There is a bibliography which contains some 250 references. S. A. K. W.

[21] **The nosography and histopathology of striate affections of degenerative character** (Zur Nosographie und Histopathologie der striären Erkrankungen degenerativer Natur).—S. KORNYEY. *Deut. Zeits. f. Nervenheilk.*, 1929, cviii, 39.

THIS is a careful study of a case of Wilson's disease, with characteristic clinical and pathological findings, in a boy of 16. The liver was cirrhosed and the spleen enlarged. There is no record of any corneal ' ring ' pigmentation. In summary, it embraces the following conclusions :

1. There was an isolated, bilateral, symmetrical softening of the putamen, all other parts of the brain exhibiting no chronic histological change whatever.

2. This putaminal softening consisted in degeneration of all ectodermal tissues (parenchyma and glia), with widespread fatty change.

3. The socalled atypical glia-cells of Alzheimer are in reality degenerative forms of protoplasmic glia, which are seen in other conditions than that with which this paper is concerned.

4. The ' status spongiosus ' of the putamen develops when the neuroglia is also involved, when its faculty of developing fibres fails.

5. Wilson's disease and pseudosclerosis are similar conditions varying in localisation and degree of involvement of parenchyma.

6. These, and some forms of torsion-spasm, belong to the group of toxic ectodermotropic affections.

7. They do not belong to a heredofamilial class ; they are the expression of constitutional but not of hereditary factors. S. A. K. W.

[22] **A clinical and pathological study of two teratomatous cysts of the spinal cord, containing mucus and ciliated cells.**—L. S. KUBIE and J. F. FULTON. *Surg. Gyn. and Obst.*, 1928, xlvi, 297.

Two cases of teratomatous cysts of the spinal cord are described, which were successfully removed at operation. Both contained ciliated cells. The first patient, a child of two years, who came under observation because of irritability and ' tender ' abdomen, gave a history of always having dragged its right foot. Repeated lumbar punctures at the level of the eleventh dorsal vertebra gave thick egg-white fluid filled with ciliated cells. At operation a large

flattened cyst was found extending from the tenth dorsal to the fourth lumbar vertebra. Histologically it proved to be a relatively simple teratoma lined with ciliated columnar epithelium. The child recovered.

The second patient, a young woman of 27, had had five attacks of left hemiplegia with pain in the left cervical region and Brown-Séquard dissociation of sensation in trunk and extremities (pain and thermanæsthesia on the right, loss of position sense and astereognosis on the left) at varying intervals since the age of two. Her present attack developed into an almost complete quadriplegia with an upper level of sensory disturbance at the fourth cervical segment, and embarrassment of respiration. A cyst filled with mucus and ciliated cells, attached to the left side of the cord at that site, was removed. Histologically there were also found in it long flat bands of smooth muscle, groups of serous and mucous glands, fat-cells, masses of lymphoid tissue, many blood-vessels, some cartilage, many small bundles of myelinated nerve fibres, and some large round cells resembling nerve-cells. After operation an excellent return of power occurred, with less complete return of sensation.

Both cysts were congenital and probably represent ependymal diverticula of the central canal of the spinal cord. References to the scanty literature on this subject are given. J.V.

[23] **A case of post-traumatic amyotrophic lateral sclerosis with myodystonic reaction** (Étude anatomo-clinique d'un cas de sclérose latérale amyotrophique post-traumatique avec réaction myodystonique).—G. SODERBERGH and E. SJOVALL. *Revue neurol.*, 1929, i, 1.

THE case here described in detail is certainly unusual and perhaps capable of more than one interpretation. It is that of a man who at the age of 52 sustained a rather serious injury of the left knee, with slow development thereafter of osseous change and a consecutive neuritis. The latter continued to develop, and after four years signs of amyotrophic lateral sclerosis made their appearance, resulting in death some 14 months later. The amyotrophies commenced in the injured limb (left quadriceps) and in the right they affected the corresponding groups (in analogy with the traumatic neuritis); only the right arm was in the end unimpaired. The affection of the left limbs finally involved the face, giving rise to a kind of left hemiparesis.

In his discussion the author is evidently inclined to place the amyotrophy as reflex in origin—that is, the result of abnormal sensory excitations. In the brain, however, the pathological appearances included numerous acellular plaques in mainly the third and fifth cortical layers; they were also abundant in the neostriatum and in the thalamus. The appearances associated with amyotrophic lateral sclerosis were evident in cord and also in cerebrum. Argentophil granulations were obvious in the plaques; and in the nuclei of various cranial nerves (nucleus of inferior oblique, facial, nucleus ambiguus, hypoglossal) a deposition of what seemed to be melanin had occurred in some

quantity. He dismisses all theories assigning an 'inflammatory' origin to the affection, and stresses its transneuronal nature. He considers it feasible that the degeneration is the result of an "extreme functional overwork" associated with the abnormal excitations mentioned above. In the event, a kind of premature senium set in, revealed by plaques analogous to, if not identical with, those seen in arteriopathic conditions. J. V.

[24] **The tremors of cerebellar disorder in man and dog** (Étude sur les phénomènes oscillatoires dans les perturbations de la fonction cérébelleuse chez l'homme et chez le chien).—H. DE JONG. *Konin. Akad. v Wetensch. t. Amsterdam*, 1929, xxxii, 292.

In the opinion of the author tremor can be distinguished from dysmetria as follows:

1. Action tremor appears under the influence of any internal or external stimulus, inclusive of movements. Cerebellar dysmetria appears exclusively during movement; it is a locomotor phenomenon, whereas the other may or may not be locomotor.

2. Action tremor is absolutely rhythmical, but dysmetria is non-rhythmical and irregular.

3. In cerebellar dysmetria the limb oscillates as a whole; in action tremor limited muscular groups may be in activity.

4. 'After-discharge' is seen in some action tremors, but there is no such phenomenon in dysmetria.

In some 28 cerebellar cases the author claims to have distinguished pure dysmetria in 23, and a combination of dysmetria and action-tremor in 5. In three decerebellarized dogs this latter combination was found; in them the cerebellum was completely extirpated, which "proves that cerebellar phenomena are produced outside the cerebellum, perhaps in the Rolandic convolutions." S. A. K. W

[25] **The oscillatory phenomena of disseminated sclerosis** (Étude sur les phénomènes oscillatoires dans la sclérose en plaques).—H. DE JONG. *Konin. Akad. v. Wetensch. t. Amsterdam*, 1929, xxxii, 48.

In the great majority of cases of disseminated sclerosis the tremor belongs to what the author describes as 'type A,' which is identical with cerebellar dysmetria. In other cases, it may belong to 'type B,' identical with pyramidal tremor (tremor during pyramidal action); or to 'type B^1,' identical with the tremor of cerebellar action; or to 'type C,' which is a mixture of A with one or other of the B types. There is no such phenomenon as a specific 'intentional tremor,' and in most cases the involuntary movement is not a tremor at all, but a dysmetria—an irregular execution of movements. The author holds that intention-tremor has nothing to do with 'intention' but corresponds merely to the movement itself. He also considers that augmentation of the

oscillation at the end of a movement (in disseminated sclerosis) is distinctly rare. The 'tremor at rest' of paralysis agitans cases is due to a rhythmic discharge in certain groups of nerve-cells and differs fundamentally from the 'tremor' of disseminated sclerosis (type A); but the B and B^1 types do not differ essentially from the former. S. A. K. W.

[26] **Extraneural and neural anomalies in Friedreich's ataxia.**—B. J. Alpers and R. W. Waggoner. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 47.

Spina bifida occulta was found to be present in seven members of a family of ten, all of whom were susceptible to the development of Friedreich's ataxia. Only four of these were frank, outspoken types of hereditary ataxia, while two others were examples of the abortive type, or the "forme fruste" of Rombold and Riley. The presence of spina bifida occulta suggested a search of the literature for other developmental malformations and it was found that practically every system of the body may show physical evidence of degeneration. The anomalies include: disturbances of the eyes, such as astigmatism, cataracts, optic atrophy and retinitis pigmentosa; endocrine imbalance, manifesting itself as myxœdema, cretinism and infantilism; deformities of the hands and feet in the form of syndactylism and main-en-griffe; bony deformities of the skull, micrognathia and fragilitas ossium; anomalies of the hair, muscles and skin; malformations of the ear and degeneration of the cochlear division of the eighth nerve.

The occurrence of such purely developmental malformations can hardly be explained on any basis other than that of a tendency to direct inheritance, and there are good grounds for believing that Friedreich's ataxia is not only a familial but a hereditary disease which appears sporadically, involving either single or many members in the group. R. M. S.

[27] **A case of adhesive spinal arachnoiditis simulating spinal cord tumour.**—W. W. Young. *Jour. Nerv. Ment. Dis.*, 1928, lxviii, 11.

The patient, in addition to a psychoneurosis, suffered from a Brown-Séquard type of paralysis with pain in the area of the tenth, eleventh, and twelfth dorsal segments. Laminectomy was performed on expectation of finding a tumour, but an adhesive arachnoiditis was found instead; the thickening and adhesions were removed and the above-mentioned dorsal roots were cut. The patient made a good recovery and was able to return to work walking normally. R. G. G.

[28] **Pernicious anæmia after resection of stomach** (Perniziöse Anämie nach Magenresektion).—H. Dennig. *Münch. Med. Woch.*, 1929, lxxvi, 633.

The record of this case is of especial interest to the neurologist. A man, age 41 years, had a severe hæmoptysis in 1916. A complete resection of the

stomach was performed in 1918. He remained well till 1926 when he complained of paræsthesiæ. His blood count was typical of a primary anæmia. In 1928 he died of bronchopneumonia, and at postmortem findings consistent with the diagnosis of pernicious anæmia were found. The spinal cord showed degeneration in the central areas of the posterior columns. This is therefore a record of a case of subacute combined degeneration of the spinal cord in a patient who had his stomach removed eight years previously. E. A. C.

[29] **Inversion of the abdominal reflexes** (L'inversion des réflexes abdominaux).—G. SODERBERGH. *Revue neurol.*, 1928, i, 26.

THE author asserts from clinical observation that inversion of the abdominal reflexes may occur independently of paresis of the muscles on the side stimulated; that in spinal compression a genuine crossed abdominal reflex can be obtained; and that these inversions are usually missed because in the first place strong excitation is necessary, and, in the second, because a latent period may exist.

His theory is, apparently, that in spinal compression pyramidal function is interrupted, whence the loss of the ordinary abdominal reflexes. But if sensory conduction is not completely blocked, then the stimulus can make use of a non-pyramidal motor system. J. V.

PROGNOSIS AND TREATMENT.

[30] **Calcium and phosphorus metabolism of epileptic children receiving a ketogenic diet.**—MARTHA VAN KINK NELSON. *Amer. Journ. Dis. Child.*, 1928, xxxvi, 716.

THIS article is worthy of attention as it raises questions regarding the advisability of placing epileptic children upon a prolonged and rigorous ketogenic diet. Unfortunately the experiment has not been carried out over any prolonged period of time. The author found that on a ketogenic diet the output of calcium and phosphorus exceeded the intake; she also found that there was a major shift of the excretion from the fæces to the urine. During the period of the experiment the calcium and phosphorus levels in the blood were within normal limits. It, therefore, appears that on such a diet children must call upon their stores of calcium and phosphorus, a state of affairs which may result in damage to the central nervous system or bones. E. A. C.

[31] **Experimental study of the acid-base equilibrium in children with idiopathic epilepsy.**—IRVINE MCQUARRIE and HADDOW M. KEITH. *Amer. Jour. Dis. Child.*, 1929, xxxvii, 261.

PATIENTS with moderately severe epilepsy were placed on a high ketogenic diet until seizures were prevented; conditions were then modified in various

ways in an attempt to produce attacks. Administration of carbohydrate to one patient and carbohydrate and insulin to another caused recurrence of seizures. In another case a mild dietary alkalosis suddenly replaced by an uncompensated alkalosis, resulting from administration of sodium bicarbonate, was followed by a seizure. On the other hand the production of marked alkalosis failed to produce an attack in subjects with infrequent attacks. In a fairly well controlled case with frequent convulsions, the attacks were reduced in number to the greatest extent when the patient was fasting or on a ketogenic diet having an acid ash; and in this case during the periods of convulsions the venous blood Ph was found to shift towards the alkaline side of the normal range.

From the results of these experiments the conclusion may be drawn that the abnormality in the acid-base equilibrium is not the fundamental factor in the production of epilepsy, but the expression of some deeper disturbance.

E. A. C.

[32] **The effect of the alkaloid harmin in postencephalitic conditions** (Untersuchungen über die Wirkung des Alkaloides Harmin bei postenzephalitischen Zuständen).—ALWIN WISCHER. *Münch. Med. Woch.*, 1929, lxxvi, 451.

THE author records the results after the administration of harmin in three cases of Parkinsonism following encephalitis. He found that there was some slight improvement in the power of sustaining repeated fine movement and in the rapidity of spontaneous voluntary movements but that no effect was observed upon tremor and salivation. No ill effects were produced with a dose of 0.02 g twice daily; higher doses were not given. Better results were obtained by combining the two drugs harmin and scopolamine; from his records, however, most effect appears to have resulted from the scopolamine.

E. A. C.

[33] **Therapeutic experiences with chronic encephalitics** (Therapeutische Erfahrungen bei chronischen Enzephalitikern).—W. KURBITZ. *Allg. Zeits. f. Psychiat.*, 1928, lxxxix, 390.

THE experiences described here were obtained in an institution for young cases, not bed-ridden, and judged capable of some improvement or at least arrest of further developments; 79 male and 26 female cases were treated, including a few adults, falling into the two main groups, those with character changes and those with the amyostatic syndrome; a fair number suffered from a combination of these.

Therapeutic efforts were both medical treatment and remedial education, both being required for satisfactory results. Drugs and injections for foreign

proteins, arsenic preparations and inoculations with malaria have all been tried ; no ill-effects were found, but with all sorts of drugs transient improvement was soon followed by relapse into the former state. As a rule atropine and scopolamine have remained the only useful ones, given for five-day periods with intervals of two days. Luminal proved useful in oculogyric spasms, and attacks of hyperpnœa seemed lessened by giving adrenalin by the mouth. Epileptic attacks were quite rare.

Physical exercise, drill, gymnastics, and rhythmical movements were found invaluable, helping to overcome inhibition of movement and in developing a sense of order and discipline ; they are best done in groups, individuals being stimulated to effort by rivalry with others ; musical accompaniment for these was most helpful.

Massage in severe Parkinson cases did best if rapidly passing from passive to active massage, reinforcing the patient's will and energy by making him co-operate.

All these physical methods of treatment are useless unless combined with re-education ; intelligence is seldom much affected and continues to develop in most cases, though those attacked before the age of five years made little and slow progress, the intelligence quotient decreasing with time. Curative education must be done by teachers with special training, understanding the special difficulties of the children ; manual training plays an important part. The general influence of the environment has a marked psychological effect, and premature discharge home usually leads to an increase of symptoms. The author considers that the experience gained in this institution makes it highly desirable that similar institutions should be provided to deal adequately with all cases, since the combination of treatment thus available promises a degree of improvement or at worst arrest of the process of deterioration, which is unlikely to be gained otherwise while keeping the patients at home, and gives them the best chance of making a tolerable adjustment to their disorders.

M. R. B.

[34] **Treatment of Parkinsonian states by Juster's method.**—S. SHAPIRO. *Jour. Nerv. Ment. Dis.*, 1928, lxviii, 488.

TWENTY-THREE cases are described which have benefited by this form of treatment. The author considers that *datura stramonium* in the form of dry leaves is the most valuable palliative remedy in Parkinsonian states. It may be prescribed in daily total doses as high as one or two g, but administered in small doses every one or two hours. Almost all the symptoms are improved simultaneously.

Cases which do not improve at all or improve slightly are those of old subjects with pronounced arteriosclerotic conditions and very severe tremor.

R. G. G.

[35] **Operation for the radical cure of trigeminal neuralgia ; analysis of 500 cases.**—C. H. FRAZIER. *Ann. of Surg.*, 1928, 534.

DR. FRAZIER'S authoritative paper on trigeminal neuralgia and its treatment should be read by all neurologists, seeing that it embodies the experiences of nearly thirty years.

The etiology of the condition remains unexplained. It is spontaneous in origin and continues uninterrupted throughout the patient's life unless therapeutically arrested. No instance of spontaneous cessation is on record. The trigeminal nerve is a nerve of perception for pain, touch, and temperature, and from numerous observations made after section of the sensory root Dr. Frazier sees no reason to qualify this statement. There is no evidence that any form of sensation is in any way influenced after excision of the superior cervical ganglion with or without stripping of the periarterial plexus of the common carotid. As for the question of pressure sense (face) and the facial nerve, the author finds proof of this association as follows : when the sensory root is cut there is no difference in the appreciation of deep pressure on the two sides of the face ; when the face is paralysed on one side as well as insensitive from section of the sensory root, there is gross diminution in the appreciation of deep pressure.

A careful anatomical description is given of the three separate and distinct bundles in the sensory root, corresponding to ophthalmic, maxillary, and mandibular divisions ; and also of the two usual patterns of the middle fossa, corresponding to the brachycephalic and the dolichocephalic skull respectively. Details are given of operative procedure, and stress is laid on the importance of conserving the part of the sensory root corresponding to the superior division. The principle of subtotal section is now carried so far that only that portion of the root is divided which conveys the afferent impulses from the pain area. If pain is controlled or arrested in the zone in which the paroxysm is initiated, this suffices. S. A. K. W

[36] **The use of bismuth in the treatment of children with congenital syphilis.**—MARGARET L. BRONSON. *Amer. Journ. Dis. Child.*, 1928, xxxvi, 1136.

THIRTY-ONE children between the ages of two and twelve years have been treated by intramuscular injections of potassium bismuth tartrate with butyn. No serious toxic effects were encountered, though a bismuth line on the gums was frequently seen in children with carious teeth. In a few instances a transitory albuminuria was found but no frank nephritis has occurred. The effect of bismuth on children with acute interstitial keratitis seems to have been favourable. Those with syphilis of the central nervous system have shown clinical as well as serological improvement. Most value has been found in the use of bismuth in those who had no tolerance for arsenic. E. A. C.

Endocrinology.

[37] **Evidence drawn from a study of the therapeutics of Graves' disease of two functions in thyroid physiology.**—G. SCOTT WILLIAMSON and INNES H. PEARSE. *Quart. Journ. Med.*, 1928, xxii, 21.

THIS study of the effect of therapeutic measures in Graves' disease provides further evidence of two functions in thyroid physiology. These are: (*a*) the secreting functions, and (*b*) the iodo-celloid function. They are not mutually derivative, for it has been shown that iodo-colloid cannot be the mother-substance of secretion proper, nor secretion proper the mother-substance of iodo-colloid.

The relation of the two functions to Graves' disease is shown by the following findings:—

1. The secretary activity of the gland is directly related to the thyrotoxicosis of Graves' disease.

2. The thyrotoxicosis is relieved by simple removal of pure secreting tissue.

3. Iodo-colloid function has only an indirect relation to the thyrotoxicosis.

4. An absolute loss of a thyroid reserve of iodo-colloid can occur in Graves' disease (48 per cent. of cases).

5. This mobilization of colloid depends upon some factor in the secretion, for the following reason: when iodine feeding is excluded, excision of pure secreting tissue causes, or allows, a reserve of active normal iodo-colloid to reappear in the remainder of the gland.

6. Iodine feeding can also re-establish a reserve of normal active iodo-colloid in the gland.

7. However the thyroid reserve of iodo-colloid is re-established it does not abolish the thyrotoxicosis.

8. There is no absolute lack of circulating iodine in Graves' disease, but

9. A relative lack of circulating iodine may complicate Graves' disease (48 per cent. of cases).

10. This relative lack of iodine is relieved by iodine feeding, but the effect on the thyrotoxicosis is not yet clear. E. A. C.

[38] **The treatment of diabetes insipidus with pituitary posterior lobe extract applied intranasally.**—JOHN R. CAMPBELL and HERRMAN L. BLUMGART. *Amer. Jour. Med. Sci.*, 1928, clxxvi, 769.

THE authors point out the necessity for repeated hypodermic injections of pituitary posterior lobe extract in patients with diabetes insipidus. As an alternative route of introduction they have applied the extract locally within the nose in eight patients and record the results. At first they sprayed the roof of the nasopharynx with the extract and found that the polyuria was completely controlled and that this method of therapy was as beneficial as

intramuscular injections; they then soaked a pledget of cotton wool with the extract and introduced this into the nose; this method was also found as good. Further, they were able to demonstrate that a small dose of the extract was sufficient by the intranasal method and that the effect was of longer duration. E. A. C.

[39] **Pituitary cachexia.**—C. H. Frazier. *Arch. of Neurol. and Psychiat.*, 1929, xxi, 1.

Hypophyseal cachexia is characterised by extreme emaciation or cachexia, which is said to be more marked in the trunk and extremities than in the face. In the average case the loss of weight varies from 22 to 44 pounds, but sometimes there is no cachexia. Regressive changes in the skin are also found, which often give to the patient the appearance of extreme old age. In the adult, the pubic and axillary hair falls out and the jaw often atrophies from loss of teeth without any evidence of decay. Trophic disturbances of the nails are sometimes found and certain vasomotor disturbances, such as cyanosis and sclerodermatic œdema, have been described. The blood-pressure is low and the pulse-rate retarded. Added to this picture is a group of symptoms which may be attributed to pituitary depression. The patient complains of weariness, exhaustion and muscular weakness, not unlike myasthenia, and in the course of time is incapacitated and later confined to bed.

There is a secondary anæmia and an eosinophilia of from six to 18 per cent. The basal metabolic rate is decreased, but this can hardly be said to be peculiar to this particular syndrome. There is often a disturbance in salt and water metabolism, with water retention and oliguria. The symptoms are the reverse of those of diabetes insipidus, and the cachexia may be due to the disturbance of salt and water metabolism, rather than to the involvement of any specific pituitary function.

Certain symptoms of hypofunction of the anterior lobe may be found. In the adult female, amenorrhœa and atrophy of the uterus and ovaries occur; in the male, impotence and atrophy of the testes; in children, arrest in the development of the gonads.

The nervous and psychic symptoms include somnolence, apathy, states of excitement, delirium, hallucinations, loss of memory, and occasionally epileptic seizures.

The pathology of the condition is not well defined. Cases have been attributed to embolism in patients in the puerperal state, others to lesions of the pharyngeal duct, to pituitary tumours, to tuberculosis, syphilis, infection and hæmorrhage in the pituitary body, and to pituitary trauma associated with fractures of the base of the skull. Frazier reports two cases. In the first, that of a boy aged 17, operation disclosed a cyst of the pharyngeal duct. The second case was that of a man, aged 20, who had shown apathy and lack of energy for 13 years. His appearance resembled that of a boy in his teens.

He was undernourished and underdeveloped, with a dry scaly skin and absence of body hair. A transfrontal craniotomy exposed a cyst of Rathke's pouch. When the patient was seen two years later a striking improvement was noted. He had grown six inches and had become mentally and physically alert with marked improvement of vision. R. M. S.

[40] **Tetany in infants : A comparison of various agents used in treatment.**—Harry Bakwin, Ruth M. Bakwin and Gertrude Gottschall. *Amer. Jour. Dis. Child.*, 1929, xxxvii, 311.

In a series of children suffering from tetany in association with rickets the effect of various agents upon the serum calcium was observed. Those given irradiated ergosterol in doses of 4 mg daily obtained quickest clinical relief and the serum calcium rose to normal on the average in seven days. This form of medication was found more prompt than cod liver oil or irradiated cholesterol. Prompter effect is obtained by the administration of calcium chloride along with the irradiated ergosterol. Unfortunately the authors have not attempted to show the origin of the increased serum calcium when ergosterol alone was administered ; and the question whether ergosterol mobilized the body calcium or promoted the absorption of ingested calcium has not been settled. E. A. C.

[41] **Macrocephalia or macromelia paræsthetica.**—J. Ratner. *Jour. Nerv. Ment. Dis.*, 1928, lxviii, 142.

The macrocephalia or macromelia paræsthetica described by the author is characterized by a suddenly arising feeling of growth of the head and of separate parts of the body. This symptom may be observed in different endocrino-vegetative disturbances, especially in hyperpituitarism. It seems to be closely related to the pseudomelia paræsthetica described by Bechterew, and is apparently produced by irritation of proprioceptive-sensory fibres that transmit the position of the parts of the body. R. G. G.

Psychopathology.

PSYCHOLOGY.

[42] **Sex difference in the association of ideas.**—Catherine Cox Miles and Lewis M. Terman. *Amer. Jour. Psychol.*, 1929, xli, 165.

From a survey of the reported differences between the sexes in the association of ideas as demonstrated by traditional types of word association technique, two well-established facts emerge : (1) significant sex differences in the quality of word associations as indicated (*a*) by their content (type, extent, value, normality) and (*b*) by their form, are found in a number of cases where the groups compared are unequal in experience ; they are not found in the few cases where

the training and experience of the groups were approximately similar; and (2) considerable differences are found to exist between the respective fields of interest of men and women, and of boys and girls, who are representative of the general population.

Sifting the data systematically has brought to light the following unlikenesses between the sexes in terms of the responding subjects. (1) There is a slight tendency to difference in response types expressed in terms of more superficial and less meaningful (male) or less indifferent and more cooperative (female) responses. (2) A slight tendency to difference is found in that personality type which appears to be rather more a function of the individual and less of the performance. The male characteristics are objectivity, logic, cool judgment; the female characteristics are subjectivity, personal evaluation, warm appraisal. (3) Differences slight and great exist in interest type as viewed from two aspects: (*a*) extent of interest, value of interest, normality of interest, and (*b*) character of interest. With reference to the first it appears that sex differences are quite negligible when groups of adequate size and equality of status are compared. (4) Insignificant differences only are found in the form type, whether verbal merely or logical in character. C. S. R.

[43] **Hand structure and characterology** (Handbau und Charakterkunde).—A. FRIEDEMANN. *Jahrb. der Characterol.*, 1929, vi, 123.

THE article is one of a series by the author in which he attempts to show that there are characteristic points about the structure of the hand from which deductions as to character type may be drawn, and that it is probably observations of this kind which give some scientific foundation to the pretensions of palmists.

He begins by discussing the relations between physical structure and character investigated by various workers, especially Kretschmer, concluding that the latter's views have on the whole been substantiated by the large quantity of work done by subsequent investigators. He points out that in the many points of physical structure considered by these scientists the hand, though notably an important and highly developed part of the body, has received little special study except in palmistry. He discusses the latter at some length, concluding that where its results are not mere guess-work they give some clue to character as the result of prolonged and observant study of hands of varied conformation.

Starting out from cases of mental disease, he gives an account of his findings among cases of dementia præcox and manic-depressive insanity. Among these he finds that the different types of hands he describes as most common correspond closely as to the relative proportions among the two groups, as is found by Kretschmer for his body types. Among schizophrenics he describes three sub-types: the athletic, accompanying the athletic body type and chiefly in catatonics; the aristocratic; and the infantile-dysplastic.

Common to all these is a certain lack of harmonious proportion in the hand, a defective circulation, looseness of subcutaneous tissue, and, on the palm, lines running across the usual M-shaped ones from wrist to the base of the fingers, all the lines being poorly marked.

In the manic-depressive group, on the other hand, the pycnic type of hand is of well-balanced form, palm and fingers of equal length, phalanges rather short, and the whole outline smoothly rounded, while the subcutaneous fat is evenly distributed and firmly attached to the skin, the M lines well-marked, without cross-lines, and the circulation good, while the muscle tone varies with manic or depressed emotional states. He also describes differentiating qualities in the usual movements and postures of the hands, the schizoid group having a stiff jerky quality contrasted with smoother movements of the cycloid. The nails of the former are long, curved from side to side, with the nail-bed forming a Roman or Gothic arch, while in the latter they are flatter and form a Norman arch. The infantile-dysplastic type (into which the 'monkey-hand' would evidently fall), he finds in cases whose first breakdown comes at puberty.

Moreover, among the pycnic type male and female hands differ markedly, whereas in the schizophrenic types the male hands often are feminine-looking and seldom hairy.

He then discusses at some length his own method of investigating character in the many cases without psychosis in whom he also examined the hands, finding them to fall into the same groups. He tries to regard the personality in three aspects—subjective, objective, and environmental—and investigates the outstanding character traits from this standpoint, under sub-headings of intellect, emotion, and will or energy. The instances he describes are largely criminals or petty-wrong-doers, whose mental state he has to examine. He suggests that research on these lines might give more satisfactory results than most in use for arriving at typical character groupings, and hints that the shape and movements of the hands may have some relation to the introvert and extrovert, in that they may express an attitude assumed to the self and the environment.

The illustrations, photographs, and X-ray prints are not very good, and one feels that drawings would illustrate the outstanding points of the differentiated types more satisfactorily. M. R. B.

NEUROSES AND PSYCHONEUROSES.

[44] **Clinical phenomena associated with depressions, anxieties and other affective or mood disorders.**—Lloyd H. Ziegler. *Amer. Jour. Psychiat.*, 1929, viii, 849.

From the illustrated cases the writer gives, it is concluded that normal health, joy and happiness come from satisfying experiences with environment. Grief is associated with thwarting and unpleasant events. It is a prevalent concep-

tion that emotions result from a response to some stimulus or external provoking circumstance, and that catastrophe and misfortune are necessary to induce distressing emotions. There are persons in whom sadness, anxiety, depression, elation and feelings of extreme well-being seem to be almost entirely of endogenous origin. Such a person once beset by a distressing emotional state, and finding no exogenous cause for it, reacts to it in various ways, among which is a vigorous and ceaseless subjective search for its cause. He may search his past for transgressions. If he has somatic distresses, which are frequently associated with anxiety and depression, he may solicit the services of a general practitioner of medicine to hunt for a diseased organ. If an organic lesion is found, it may prove disappointing to the patient and physician to expect relief too soon from the mere treatment of the lesion. If an organic lesion is not found, it is equally disappointing to the patient to be told that his trouble is imaginary, or that he has nothing wrong with him. Depending on the locus of the most vigorous complaints, diagnoses such as nervous dyspepsia, gastric neurosis, and sexual neurosis may be made. If, because of such diagnoses, all therapeutic efforts are directed toward supposedly diseased organs, the miserable personality as a whole may continue to struggle and search for relief far and wide, in and out of the medical profession. The distress of the personality as a whole, while showering many complaints on some part of the body, varies greatly from one person to another, and may be expressed in unusual terms, out of the inherent tendencies and life experience of the patient. Abnormal physiology (probably part of the emotional distress) further tends to disrupt the well-being and functioning capacity of the patient as a whole. Insidious chemical and immunological changes associated with anxiety and depression doubtless favour metabolic disease, as well as infectious invasions. The dichotomy of life into mind and body has retarded knowledge of the biological reactions of man. Thoughts and feelings are as much a product of the patient as the gastric secretions or the pulse rate, and should not be studied in a detached fashion. C. S. R.

PSYCHOSES.

[45] **Hallucinosis as a clinical entity.**—A. GORDON. *Jour. Nerv. Ment. Dis.*, 1928, lxviii, 502.

A CASE of hallucination unassociated with delusions is described. The author concludes that in addition to the well-known occurrence of hallucinations as an expression of obsessions, the association of hallucinations with delusive ideas in the course of psychoses, hallucinations which occur in connection with organic diseases of the brain, such as tumours, etc., finally besides their development in the course of infectious processes or toxic states of exogenous and endogenous origin—besides all these possibilities, there is a class of hallucinations which stands apart, possessing intrinsically the same autonomic characteristics

as other psychiatric syndromes, viz. confusion or systematized delusional insanity, or mental depression, etc. The example described is a distinct psychosis, which might be termed a true hallucinosis. It is not dependent upon and is totally free from any association with other psychotic phenomena.

R. G. G.

[46] **The change in affective value of hallucinatory and delusional experiences in epileptic confusional states.** B. Gotz. *Allg. Zeits. f. Psychiat.*, 1928, lxxxix, 288.

This is a description of a patient who has confusional states either after some (but not all) of her fits, or apart from fits. These phases last about a week, and always begin by a hypomanic state, in which pleasant bodily sensations are experienced and she thanks everybody around her for helping and curing her, excitement rising to a paroxysm of ecstasy and noisy restlessness; then unpleasant bodily sensations appear, and she accuses everybody of persecuting her or of causing her pain and discomfort as a part of their medical treatment. While not disorientated, she misinterprets her own sensations and all occurrences about her, according to her emotional tone, and the regular alternation of pleasant and unpleasant feeling-tone is the peculiarity of the case, the former always preceding the latter. The author suggests that we may regard the epileptic attack as a catastrophe, which strips off the higher levels of the personality and sets free lower mechanisms, and is followed by stages of re-integration, passing upwards through phylogenetic layers; first, a primary general sense of well-being and universal power; then as defensive inhibitions re-form, a negative feeling of being ill-treated and persecutory delusions, projecting what is unpleasant; followed by a re-integration to a normal personality with almost complete forgetting of the preceding phases. An organic disorder, epilepsy, shows manifestations not unlike schizophrenic regressions explainable in terms of analysis of their mental processes as earlier stages of relationship to external reality.

M. R. B.

[47] **The origin of delusions** (Ueber die Entstehung von Wahnideen).—Bela Revesz. *Allg. Zeits. f. Psychiat.*, 1928, lxxxix, 304.

The thesis of this paper is, that wishes and fears stored up in the unconscious mind during youth, usually before the age of 20, come suddenly into consciousness as current reality, not recognised as having previously formed part of the mental content, and therefore not corrected, but accepted as genuine facts. The writer quotes cases showing that the content of a number of psychotic delusions can be traced to real or phantasy experiences of the patient's youth, if careful investigations are made of the past history, and that both the delusional ideas and the predominance of wish or fear in any case are determined and limited by that individual's past, usually from a time when judgment of reality was imperfect. The ego forms the centre of the delusional system, because

wishes and fears are the weapons of attack and defence of the ego. He explains, however, only the *content* of the psychosis, but gives no explanation (beyond a suggestion of a predisposing constitution) to account for the outbreak of the psychotic failure to correct the delusional ideas by current reality-testing, by criticism of them, or by recognition of them as mere wishes and fears, except in cases of general paralysis, where this is part of a general loss of critical faculties. The author ends with a comparison of his own views with those of Freud, representing the latter quite incorrectly in suggesting that bringing into consciousness of the superficial childish content of the delusion will produce cure. The paper is useful as a clinical study of content, but contributes nothing to our knowledge of causation of delusions. M. R. B.

[48] **The clinical investigation of the autonomic nervous system in fifty cases of schizophrenia.**—Muriel L. M. Northcote. *Jour. Ment. Sci.*, 1929, lxxv, 114.

The scope of this work is to show the variations in blood-pressure and pulse, together with secretory and vasomotor changes, resulting from injections of adrenalin and pilocarpine. The response of certain reflexes is also recorded. As the action of adrenalin and pilocarpine on the human subject is influenced by other factors than the state of the autonomic nervous system, the specific pharmacological action of these drugs cannot be tested. There is nothing characteristic in the mode of reaction of cases of schizophrenia to the two. There is no definite correlation between types of reaction to these drugs and clinical types. No reliance can be placed upon the reflexes used as tests of the activity of the autonomic nervous system. C. S. R.

[49] **Considerations on dementia præcox as a physical disease.**—C. B. Bamford. *Jour. Ment. Sci.*, 1929, lxxv, 120.

It is pointed out that a fulminating type of dementia præcox may be met with. At Rainhill Mental Hospital such cases only constitute ·5 per cent. of the total admissions. The special features of this type are illustrated by three cases and the post-mortem findings are described. The conclusions are that (1) dementia præcox (like many other chronic disorders) occasionally runs a very acute course. (2) It should be considered in the light of a physical disease. (3) It exhibits a constant and characteristic pathology, which may be summed up thus : (*a*) Infantilism of the cardiovascular system ; (*b*) general fibrosis of the organs, including the endocrine glands ; (*c*) a large complex type of cerebrum. C. S. R.

[50] **Schizophrenic syndromes in paralytics treated by malaria** (Sindromi schizofreniche in paralitici progressivi curati con la malaria).—A. Bertolani. *Il Cervello*, 1929, viii, 16.

Four cases of general paralysis are narrated in some detail to exemplify the somewhat rare and insufficiently studied transformation of the clinical picture

to that of schizophrenia, in the course and as a result of malarial therapy. Cases of this kind have been several times recorded and the references are here given. The change is one manifested clinically by the development of hallucinatory, paranoid, catatonic, and other forms of reaction. It has been seen in cases of general paralysis with spontaneous remissions, and in others of the same affection treated with tuberculin, typhoid vaccines, nuclein, etc.

It is suggested as conceivable that the effect is produced by the combination of lues and malaria, though if so one might expect it to occur with greater frequency. The writer is inclined to see in it a change of locality from cortex to deeper-lying cerebral structures. The schizophrenic syndrome may either disappear with further treatment or persist indefinitely. S. A. K. W.

[51] **Physical findings in schizophrenia.**—Karl M. Bowman and Alice F. Raymond. *Amer. Jour. Psychiat.*, 1929, viii, 901.

A statistical study at the Boston Psychopathic Hospital of certain physical and historical data in 1,196 cases of schizophrenia, with 836 cases of manic-depressive insanity and 412 cases of general paresis as controls, shows the following results:

The physical findings in schizophrenia are essentially the same as in manic-depressive insanity, whereas the findings in both differ significantly in many respects from those found in general paresis. Leucocytosis in a frequent finding in schizophrenia and affective disorders but is more common in general paresis. Alcoholism is infrequent in schizophrenic and affective disorders but is more common in general paresis. Pregnancies, births and living children are fewer among cases of schizophrenia. This appears to be because fewer of such cases marry. One reason that fewer marry may be because schizophrenia comes on slightly earlier in life. A study of the number of pregnancies among those who do not marry shows that there are as many pregnancies for the schizophrenic group as for the other two groups. C. S. R.

[52] **A clinical and experimental study of the catatonic syndrome** (Étude comparative expérimentale et clinique des manifestations du syndrome catatonique).—H. de Jong and H. Baruk. *Revue neurol.*, 1929, i, 21.

Underlying the catatonic syndrome are signs of involvement of the cerebral cortex, which can be proved both clinically and experimentally. The syndrome differs from Parkinsonism, in spite of certain resemblances; in the latter the immobility is secondary to the rigidity and varies with it; in catatonia the immobility is as it were primary. But this cortical involvement will not explain all the phenomena of the syndrome, such as the relative 'inexcitability' of the vessels of the limbs, vasomotor derangements, disorders of salivation and of general metabolism, etc. Catatonia therefore cannot be considered as a localised affection, but must have a diffuse basis. On the motor side,

catatonia resembles pathological states producible in the cat by the use of bulbocapnine. Presumably there is some toxic condition underlying the phenomena of catatonia as observed in clinical cases. J. V.

[53] **The sedimentation velocity of erythrocytes in the psychoses: a study of seventy-three cases.**—E. W. ANDERSON. *Jour. Ment. Sci.*, 1929, lxxv, 80.

A HISTORICAL survey and a brief outline of the phenomena upon which this work is based are given. The technique and the results obtained are discussed. The conclusions arrived at are that Cooper's technique is superior to that of Bochner and Wassing and similar methods. The sedimentation test is of no value in the differential diagnosis between various psychoses. It also has no value in estimating the degree of mental improvement or deterioration. The existence of a constant and marked acceleration of sedimentation velocity in general paralysis has not been confirmed. The sedimentation test is of value in mental hospital practice in assisting towards an earlier diagnosis of pulmonary tuberculosis than is usually obtained in those cases where, owing to mental impairment, the patient is unable to give the necessary intelligent co-operation in the physical examination. It appears probable that chronic processes do not materially influence the sedimentation velocity of the erythrocytes. C. S. R.

[54] **Biometrical studies in psychiatry.**—WALTER FREEMAN. *Amer. Jour. Psychiat.*, 1929, viii, 425.

BASED upon the study of about 1,100 psychotic patients coming to necropsy at St. Elizabeth's Hospital, Washignton, in the past ten years, figures are presented to show graphically what has always been recognised, that individuals in their susceptibility to disease vary according to their psychological responses. The preponderance of tuberculosis in the schizoid individual is contrasted with the susceptibility to carcinoma, chronic streptococcus infections and circulatory disasters in the extroverted individuals, particularly the paranoid. Methods of prevention of morbidity and mortality are suggested. It would seem possible to apply these preventive measures intensively to the groups to which they are best adapted. C. S. R.

PSYCHOPATHOLOGY.

[55] **Pick's disease (circumscribed senile cortical atrophy)** (La maladie de Pick : atrophie sénile circonscrite).—C. I. URECHIA and S. MIHALESCU. *L'Encéphale*, 1928, xxiii, 803.

PICK in 1892 described regional atrophy of cortical convolutions in some senile brains. The atrophy was usually more or less symmetrical but greatest on the left side. Clinically the most evident symptoms were dementia and a

somewhat peculiar type of aphasia. Since then numerous authors have described similar cases, and have found that the pathological substratum consists of a cortical atrophy affecting especially the deeper layers of cells and the association fibres. Senile plaques are rare and the peculiar changes of the neurofibrils characteristic of Alzheimer's disease are not found.

The case described by the writers was one of dementia, beginning at the age of 42 and fatal in seven months. Bilateral optic neuritis was found on examination along with apraxia and sensory aphasia. Post-mortem the brain was found to be atrophied especially in the fronto-parietal regions, the temporal pole and the insula. Microscopically there appeared to be a purely neural atrophy affecting especially the cells of the second, third and fifth cortical layers. There was considerable neuroglial overgrowth and a great excess of corpora amylacea. The argentophil corpuscles of Alzheimer were not found. Vascular changes were slight and insignificant.

The authors discuss the etiology of the condition, but are unable to find any constant factor. There is no evidence that the basis of the disease is either vascular or infective. On the other hand certain cases are familial, or other neuropathic diseases have occurred in the family. The basis of the disease appears to be a degeneration of the cortical nerve cells, without evidence of inflammation. J. G. G.

[56] **Epilepsy and the relation between cell function and organic cerebral function.**—L. B. Bibb. *Jour. Nerv. Ment. Dis.*, 1928, lxviii, 496.

A somewhat remarkable theory is here put forward. It is built up as follows:

1. The neurones are regarded as the physical basis for habits and character. Normal character is believed to be formed round the paths of incoming impulses from the sense-organs. The inner or cortical neurones are believed to depend for stimulation and exercise upon incoming sensory impulses. Repetition tends to link up the cortical neurones into habit patterns and integrations.

2. If the central neurones are not connected directly or indirectly with some variety of sensory mechanism, they constitute an element of danger, in that they may undergo a morbid integration competing with the normal personality. Delirifacient drugs owe their characteristic effect to their selective stimulating action, affecting only certain of the neurones, and thus dilapidating the normal habitpatterns and integrations. Chemical stimulation tends to build up an artificial personality which competes with the normal, or sense-organ, personality.

3. Epilepsy is due to a parasitic fragment of personality, consisting of cortical neurones insulated at their afferent or receiving pole; these cells are connected with the motor centres by their efferent pole; they receive no afferent impulses and are left to accumulate their energy until such time as they explode on relatively slight stimulation from some source other

than sensory stimulation. Traumatic epilepsy is based on the fact that certain neurones have been deprived of their afferent connections and their opportunity to function; they constitute an element of instability until they have become reintegrated or reattached to the normal senseorgan personality. R. G. G.

[57] **Psychoanalytic mechanisms in clinical psychiatry.**—William Malamud. *Amer. Jour. Psychiat.*, 1929, viii, 929.

Psychoanalysis maintains the attitude that whatever the relative importance of organic causes (and it considers them highly probable) may be, the facts in terms of behaviour phenomena must and can be rendered intelligible to psychological approach. An insight thus gained is of more than didactic value. With the gradual accumulation of empirical data pointing to the important rôle played by psychogenic factors in the pathogenesis of the psychoses, this method in giving us an insight into the psychology of the development of the process opens up a new field for therapeutic and preventive medicine. In extramural work with persons whose problems have not brought them to a hospital or where a readjustment is to be attempted after an acute disturbance, an understanding of the handicaps under which the patient is working and of his own inadequate attempts at reconstruction offers a starting point for the physician's efforts. The attitude that phenomena of psychotic behaviour are primary, non-deducible and unintelligible structures, the use of methods that disregard the relation of the phenomena to the evolution and totality of a given situation merely help to maintain, if not increase, that wall of isolation that the disease process has built up round the patient. Such structures are abstractions, not realities. An occurrence in a human life, be it in health or disease, must always be regarded as an interaction between a special personality and a given environmental situation. It is this attitude more even than any particular theoretical aspect that makes the psychoanalytic or any allied method valuable in clinical psychiatry. C. S. R.

[58] **Focal infection in teeth.**—George W. Henry and Mary C. H. Doyle. *Amer. Jour. Psychiat.*, 1929, viii, 915.

Focal infection frequently occurs in the root canals and pulp chambers of teeth. Over 50 per cent. of teeth ordinarily extracted from psychotic patients contain streptococci and 10 per cent. contain hæmolytic streptococci. Pathogenic streptococci occur with equal frequency in the teeth of both psychotic and non-psychotic patients. No specific relationship between dental infection and any particular type of psychosis was observed. Dental X-ray photographs give accurate indication of infection in about 75 per cent. of cases, and should be made of the teeth of all psychotic patients. C. S. R.

[59] **The bacterial digestion of tyrosine, tryptophane and histidine in mental disease.**—F. H. STEWART. *Jour. Ment., Sci.*, 1929, lxxv, 53.

SOME recent work suggests that the functions of the liver are deranged in mental disease. This results in an alteration in the output of the derivatives of tyrosine, tryptophane and histidine in the urine, and perhaps also in the amount of bacterial fermentation in the intestine. This derangement of the liver may be either a cause or a symptom of the mental disease, and the increased intestinal fermentation may in the same way be either a cause or effect of the liver disturbance. In this paper, methods of quantitative analysis are given by which the intestinal fermentation of tyramine and the excretion of the derivatives of tyrosine, tryptophane and histidine can be estimated.

C. S. R.

PROGNOSIS AND TREATMENT.

[60] **Educational hypnotism.**—L. LOUIS ORTON. *Psyche*, 1929, ix, 60.

THE author states he has endeavoured to rid hypnotism of everything that should be looked upon as extraneous and to discover what was common to all sets of hypnotic procedures. He concludes that this is placidity (sometimes, but not always, accompanied by drowsiness), sometimes aimed at, and at other times a result of having strained—and thus fatigued—attention. On the basis of placidity, easy attention can usually be imposed ; and by means of such attention, extraordinary mental and physical effects (due to favourable distribution of energy) can be obtained. Ordinary attempts at close attention, being accompanied by strain, contract and cramp the mental power ; whereas by hypnotic artifices attention is rendered mobile and imagination vivid. Hypnotism is defined as " an artifically-induced contemplative mood." Some persons act ridiculously because they purposely simulate, some because they imagine themselves dominated, and others because they are very suggestible and so may be easily rushed into acting a part. The fictitious nature of ascribed hallucinations and illusions can readily be proved without reference to the unprompted admissions of suggestible subjects. It is among very suggestible people that the particular phenomena occur which have misled operators regarding hypnosis. Hypnotism tends to develop a commonly neglected side of the mentality—the meditative, and can be a valuable reclaiming influence provided desire of moral improvement be aroused in the sinner. Had hypnotic processes never come into existence, but had there been a desire to increase most effectively the capacity of attention, rendering it easy and at the same time profound, the same kind of training should have been adopted here as with other powers ; we should have sought to obtain a condition of mental relaxation, and gradually built upon that a habit of mental economy. This is what hypnotic processes do when successful. Whatever in addition occurs is incidental—due to expectancy, mainly. An increase in the capability of using

various mental powers during hypnosis is a peculiarity noticed by all experienced observers. Hypnotism is seen, in its ultimate analysis, to be an educational expedient—an expedient by means of which the essential groundwork for the complete development of our powers, physical and mental, is readily laid. Through its agency the student may be enabled to have a ready hold on much of the knowledge previously obtained, to increase rapidly the available store of knowledge, and to utilize more thoroughly what he knows. The writer states that through hypnotism he has effected much for the alleviation and cure of bad habits, helped the memory, skill in pianoforte-playing and singing, and greatly aided the would-be fluent speaker. C. S. R.

[61] **Hypnosis in criminal law.**—Erich Blum. *Allg. Zeits. f. Psychiat.*, 1928, lxxxix, 241.

This valuable paper sums up the points in the new code in which the modern growth of interest in mental influences affecting crime and in hypnosis, as well as in charlatanism of all kinds as practised by lay persons and not for treatment, has come to be taken into consideration as a factor in the production of crime. The author shows that in most of the cases tried in court, the influence brought to bear, whether in inciting to criminal actions or in rendering victims passive if not unconscious, had been gained by lay persons, any misuse of hypnotism or suggestion as part of medical practice being very rare. The interpretation of unconsciousness or unawareness or subsequent forgetting when pleaded as excuse, seems most difficult to assess on the definition in the code.

The author's summary contains six points:

(1) Hypnotiser and hypnotised alike may come into conflict with the law, the latter, however, usually only if having consented to the hypnosis.

(2) It is possible (cases quoted) that a hypnotised person may commit a crime under hypnotic suggestion, even if one contrary to his moral feelings, though usually some degree of acquiescence or a general defect of moral or intellectual development is present.

(3) Similarly crimes, especially of a sexual nature, may be committed on a hypnotised person, even if the latter resists.

(4) Hypnosis practised by lay persons for display, or by charlatans, does involve risk to the subject of the hypnosis.

(5) Hypnosis cannot alter the character of the subject, who may lie or conceal facts just as much when hypnotised as otherwise.

(6) Hence there is no justification for using hypnosis with the idea of extracting truth from witnesses, and such an attempt would be regarded as extracting evidence by force and wrongfully.

From the cases quoted, however, it is evident that as a general rule the subject of hypnotism or other undue influence who claims this as his excuse should be regarded as at least partly responsible, either for having acquiesced in the hypnosis, or as consenting to, while accepting, the hypnosis as a justification for the criminal act, and the author regards such excuses as valid only in exceptional cases, mostly where the victim is feeble-minded and unable to resist. He deplores a growing tendency to exonerate criminals and to regard as blameless victims who plead hypnotic or suggestive influence as giving them freedom from responsibility. M.R.B.

[62] **The treatment of neurosyphilis by inoculation malaria in the United States Veterans Bureau.**—P. B. MATZ. *Jour. Nerv. Ment. Dis.*, 1928, lxviii, 113.

As the result of a combined antisyphilitic and malarial treatment of neurosyphilis, the clinical course has been favourably affected and the prognosis of such diseases as paresis, taboparesis and cerebrospinal syphilis has been changed to a more hopeful status. Clinical improvement following this treatment is accompanied by favourable laboratory findings in both blood and spinal fluid. Histological studies of the brain of cases which had been on malaria therapy indicate definite reparative attempts, and attest the efficacy of the treatment.

In the U.S. Veterans Bureau the treatment of neurosyphilis by malaria, particularly in cases accompanied by intensive antisyphilitic therapy, has yielded excellent results. Clinical and laboratory statistics are most favourable and even surpass those of civilian hospitals. This may be attributed to the age of the Bureau beneficiaries under treatment for neurosyphilis (36-38), the early diagnosis, and the persistent intensive antiluetic treatment and excellent care which these patients receive in the Bureau hospitals. The longest period of treatment and observation was forty-seven months, and the average period was twenty-seven months. It is believed that these periods are sufficient in which to judge clinical results and the effectiveness of this therapeutic measure.

A number of cases had complications during the period of malarial infection; these, however, were not of any serious consequence and disappeared after appropriate treatment was instituted or after the administration of quinine. R. G. G.

[63] **Controlled malaria-therapy** (Ueber rationelle Impfmalariatherapie).—SCHELLWORTH. *Münch. Med. Woch.*, 1929, lxxvi, 272.

MALARIAL treatment differs from every other in that we are dealing with a remedy which cannot be measured out in fixed doses. The aim of every kind

of treatment is to achieve the maximum of benefit in the shortest time with the greatest possible sparing of the patient. The more the dangers of malaria therapy can be reduced, the wider will the indications for this treatment become. Two requirements must, however, be fulfilled: (1) the first, which is already attained, is to bring the fever quickly to an end, without fear of recurrence; this will reduce the recovery period which has to be spent in hospital and so reduce the call on beds; (2) it must be possible, if there are threatening symptoms, immediately to stop the febrile attacks for a time without extinguishing the malaria altogether, that is to say, to influence the course and severity of the fever to suit the individual patient.

To attain the second, recourse has been had to very small doses of quinine, and also to neosalvarsan, both of which are unsatisfactory because their action is variable in degree and they are liable permanently to abolish the attacks. A much more successful measure has been found in plasmoquin, in regard to which the author of this paper reports some interesting observations. Sioli had already found that with inadequate doses the effect of plasmoquin was to cause a temporary cessation of the fever.

Schellworth began by giving all his patients in the febrile stage ·02-·03 g daily (divided into several doses) and in many cases achieved the desired interruption of the fever during the period of administration without affecting its subsequent course. In a few cases, however, the fever ceased absolutely, and plasmodia disappeared from the blood. In some cases, on the other hand, the febrile attacks were not interrupted at all, but their severity was reduced, the fever being 1-1½° C. lower than before. Administration of plasmoquin on the day of the rigor produced no effect on that day's rigor.

As the same strain of malaria was transmitted from patient to patient, it became gradually more resistant to the action of plasmoquin, and the dosage of the drug consequently had to be increased, two or three times the quantity being necessary in the second host. On this account the later results were much less favourable than those in the early cases, but if it is possible always to use a strain of plasmodium which has not been subjected to the action of plasmoquin, probably, with experience, better results could be obtained. Unpleasant symptoms which may be associated with the taking of plasmoquin are cyanosis and a livid-grey colour of the face, and these may persist for as long as three weeks after administration of the drug has been stopped. During the time plasmoquin is being taken degenerative structural changes are found in the plasmodia.

It was not found possible to obtain any resistance of the organism to quinine similar to that which developed to plasmoquin, and even when resistance to the drug had been acquired the usual dose of quinine was always sufficient to bring the fever to an end. J. P. M.

[64] **Personal experiences in regard to the influence of natural malaria on neurosyphilis** (Nuestra experiencia personal respecto a la influencia de la malaria natural sobre la sifilis nerviosa).—L. MERZBACHER and A. E. BIANCHI. *Archivos Argent. d. Neurol.*, 1928, ii, 252.

THE authors of this valuable communication visited two states of the Argentine Republic (Jujuy and Salta) where malaria is frequent, to study its possible effects on the evolution of syphilis. They examined personally a large number of patients, and also communicated with various medical men in malarial localities by means of a questionnaire.

Their first definite conclusion is that in areas where paludism is rampant general paralysis and tabes are practically unknown. They cite a few alleged cases of these conditions investigated by themselves, showing the diagnosis to be uncertain in more than one, and leaving a maximum of two or three. On the other hand, syphilis exists, in quantity. For the purposes of this study seven groups were made and the Wassermann blood test performed in all, as follows :—

Clinical condition.	Number of cases.	Wass. in blood +	Percentage.
1. Acute malaria	17	5	30
2. Latent malaria	10	1	10
3. Syphilis	6	2	33
4. Latent syphilis, acute malaria ...	4	3	75
5. Latent syphilis, latent malaria ...	25	4	16
6. Acute syphilis, acute malaria ...	3	1	33
7. Acute syphilis, latent malaria ...	7	3	43
	72	19	27

Making a further three groups, the 72 cases can be reclassified as follows :

1. Malaria alone	27	6	30
2. Syphilis alone	6	2	33
3. Syphilis + malaria	39	11	28

From these figures the benign effect of malaria on syphilis is readily deducible ; in fact, syphilis and malaria, occurring separately, give a percentage of positive Wassermann reactions more than twice as high as in the case of malaria +syphilis, occurring together. S. A. K. W.

[65] **Quartan malarial fever in the treatment of parasyphilis** (Malariaquartana-Fieber bei Metalues).—KIRSCHBAUM. *Münch. Med. Woch.*, 1928, lxxv, 469.

KIRSCHBAUM records briefly seven years' experience in using quartan malaria for the treatment of general paralysis at Weygandt's cliinc in Hamburg. He concludes that there are no contra-indications to its use, that it is as sensitive to quinine as tertian and, being milder than tertian, it may be used for less robust

patients ; the results obtained do not in any way fall behind those with tertian. Quartan fever is not likely ever to be as much used as tertian, but it should be used when a second course of treatment is required in a patient who has already undergone a course of tertian and for the rare patients who are resistant to that infection. The longer duration of the quartan febrile attack may be advantageous or disadvantageous according to the circumstances of a particular case. In the regularity of its course quartan malaria is superior to recurrent fever. Recurrent fever is generally considered as being less severe on the patient than tertian malaria, and, in Kirschbaum's view, quartan malaria is at least as well borne as recurrent fever. Although it has these various advantages, it must be recognised that every precaution in treatment is just as necessary as when tertian malaria is used. J. P. M.

[66] **Tryparsamide treatment of paresis : A clinical report of one hundred cases.**—R. C. JAENIKE and G. W. FORMAN. *Jour. Nerv. Ment. Dis.*, 1928, lxviii, 261.

THE opinion of the author is that :

1. Beneficial results of the treatment occur in indirect ratio to the duration of symptoms before treatment is instituted.

2. Improvement is first noted from the sixth week to the third months after treatment is started.

3. By long continued treatment, clinical and serological cures were produced in 5 per cent. and clinical and mental improvement in 38 per cent.

4. Eye complications occur in a small percentage of cases, but are of sufficient importance to be looked for at all times.

5. Best results are obtained in cases presenting a manic type of symptoms.

R. G. G.

[67] **The treatment of general paralysis with saprovitan** (Erfahrungen mit der Saprovitanbehandlung bei progressiver Paralyse).—KANDERS. *Münch. Med. Woch.*, 1928, lxxv, 1499.

WORKING in Wagner-Jauregg's clinic at Vienna Kanders, in a series of twenty cases of general paralysis, used the saprovitan treatment and the malaria treatment in alternate cases and compared the results in two groups. Of those treated with saprovitan one was in the initial stage, five were cases of moderate dementia, and four were advanced. These cases presented on the whole more intellectual defect than those in the malaria group, which consisted of two early cases, five in a stage of moderate dementia and three advanced cases.

With the saprovitan treatment, in none of the cases was even a transitory remission or improvement of the symptoms attained ; after the treatment, the cases showed a more or less rapid deterioration and the results must be

considered nil. With the malaria treatment there were two complete remissions, and three incomplete remissions, leaving the patients capable of returning to work; in two other cases the patients are in institutions but capable of some work; one patient died three months after the treatment; two others had a second course of malaria with good results.

Four of the patients of the saprovitan group subsequently had malarial treatment, but they bore it badly; three of them quickly developed complications which rendered the continuation of the treatment impossible; the fourth was able to have the complete course and made such improvement that he was eventually able to return to his work.

While in this series there were no fatal or serious complications actually during the saprovitan treatment, the patients in some cases had unpleasant symptoms such as diarrhœa, vomiting and irregular fever, and severe and even fatal complications have been recorded by other writers. A modified preparation ('Neo-saprovitan') has been introduced, which in Kanders' opinion is likely to be less harmful than saprovitan but from which greater influence on the course of general paralysis is hardly to be expected. J. P. M.

[68] **The treatment of the insane in states of excitement by sodium hexophane** (Zu der Behandlung schwer erregter Geisteskranker mit Hexophannatrium).—Ostmann. *Allg. Zeits. f. Psychiat.*, 1928, lxxxix, 294.

Sodium hexophane is one of the quinolin preparations of the antipyretic group, the use of which was suggested by Weichbrodt, who explained its quietening effect in excited patients by an association between chronic rheumatism of joints and the endogenous psychoses. Transient but not lasting effects were obtained by Klein and Wuth, the latter ascribing its effect to some action on vegetative centres. The author gave a 10 per cent. solution intramuscularly daily, starting with 0·5 g of this, and increasing after five-day periods until reaching 3 g, and continuing this dose for at least a fortnight, then breaking off abruptly. The only ill-effects were vomiting in two cases, diarrhœa in one, all on the second day and not repeated thereafter, though the treatment continued. One patient vomited a little daily for a week, but reduction and more gradual increase of the dose stopped it. Another had urticaria on the ninth day, and the treatment was stopped. Thirty cases were fully treated, all men. One manic patient, age 60, showed only slight decrease of excitement for two periods of three days and was otherwise unchanged, needing other sedatives. The rest were all schizophrenics, in excited and violent phases, except for one violent postencephalitic, and one patient with stupor. The last improved only in a decrease of negativism. The rest all were quieter by day and slept with less or no sedative at night, and remained after stopping treatment, still showing these improvements, though none could be considered cured. On the whole, the hallucinated cases became less actively hallucinated.

M.R.B.

[69] **Eugenic sterilization in California.**—P. POPENOE. *Jour. Nerv. Ment. Dis.*, 1928, lxviii, 17.

THE marriage rate of the psychotic of both sexes is markedly below that of the general population at all ages. While male psychotics marry freely (though in diminished proportion) at all ages, the female marriage rate remains almost constant after the age of thirty. Since three-fourths of all first admissions are aged thirty or over, it appears that a woman who is single on admission to a hospital for mental diseases is, even if promptly discharged, likely to remain single during the rest of her life. A far-reaching programme of sterilization must therefore find some way of dealing with these women in the pre-psychotic stage. There is some indication that in women the lower marriage rate is partly due to deliberate abstention from marriage, and not merely to failure to attract a mate. Wide differences exist in the marriage rates of men with various types of psychosis. The same variation is found in women, but one-third less than in men. The marriage rate of sterilized patients with dementia præcox is lower than that of the manic-depressive at all ages. The two curves do not show any other striking disparity.

In a small group of males with dementia præcox the percentage having more or less normal heterosexual libido is much larger than has been reported in previous studies. R. G. G.

[70] **Principles of a rational penal code.**—SHELDON GLUECK. *Mental Hygiene*, 1929, xiii, 1.

SOCIETY should utilize every scientific instrumentality for self-protection against destructive elements in its midst, with as little interference with the free life of its members as is consistent with such an aim. To put this principle into practice, scientific individualization of peno-correctional diagnosis and treatment is necessary. Individualization should be effected by a scientifically qualified treatment board, to begin to function after the individual offender has been found (or has pleaded) guilty in the existing criminal court. In addition to the original disposition of cases, the treatment tribunal should periodically review the progress of offenders under treatment, modifying the original "prescription" (sentence) if necessary. The board should utilize existing scientific facilities (psychiatry, psychology, social work) in individualization. Provision is necessary for protecting individual rights against possible arbitrariness or other unlawful conduct of the treatment board. Certain modifications in substantive law may be expected to result from this basic change of procedure, and these, together with a truly indeterminate-sentence provision and improvements in peno-correctional practice, would facilitate the work of the treatment body. C. S. R.

Reviews and Notices of Books.

A Historical Introduction to Modern Psychology. By GARDNER MURPHY, Ph.D., Instructor in Psychology, Columbia University, New York. London: Kegan Paul & Co. 1929. Pp. 470. Price 21s. net.

DR. GARDNER MURPHY has undertaken an ambitious task and in performing it produced a valuable work. He has attempted a systematised review of various phases of psychological history from the seventeenth century to the present, devoting more than half his volume to developments since the beginning of the twentieth. The reader is taken from the days of Hobbes, Berkeley, Locke, Hume, and Kant, to those of Mill, Bain, Darwin, Helmholtz, Wundt, and other philosophers and psychologists of the nineteenth; and his rapid introduction to these great names and to the movements which they initiated or supported is succeeded by a more detailed account of contemporary research in the same field, with a sketch of such recent aspects of the subject as behaviourism, child psychology, psychoanalysis, personality, social psychology, and so forth. This attractive flight over years and generations provides the student with a conspectus of psychological results to a greater extent than of psychological theory; the author's aim is to show how one field after another has been conquered by scientific method, and in consequence much of more purely theoretical or philosophic interest has been left untouched. As it is, the consecutive chapters make excellent reading, especially perhaps those dealing with present-day points of view. A supplementary chapter on contemporary German psychology, from the pen of Dr. Heinrich Kluver, contains a precis of the 'personalistic psychology' of Stern, the 'Gestalt psychology' of Wertheimer and others, the 'developmental psychology' of Krueger, and others still which need not be particularised.

All this is very well done indeed; it must have been a labour of love. The sections on 'physiological psychology' are, we consider, less satisfactory and less adequate; the account of present-day theories of aphasia is too sketchy to be of value, and insufficient stress is laid, in commenting on the cortical experiments of Lashley and others, on obvious differences between the brains of rats and men. The problem of sleep is rather more advanced towards solution than can be gathered from the brief paragraph assigned to it; and the statement that "affective functions are to a large extent degree dependent upon the midbrain" it would be easy to traverse.

Tumours arising from the Blood-vessels of the Brain. By HARVEY CUSHING, Professor of Surgery, Harvard Medical School, and PERCIVAL BAILEY, Associate Professor of Surgery, University of Chicago. London: Baillière, Tindall and Cox. 1928. Pp. 219. Price 34s. net.

ANOTHER valuable monograph on a special variety of intracranial tumour bears witness to the fruitful collaboration of Professor Harvey Cushing with his neurosurgical associates, and incidentally again illustrates the wealth of clinical material at his disposal. What arouses the reader's admiration, however, is not so much the amount of material as the excellent way in which it is investigated and the lessons it teaches marshalled so as to increase the sum of neurological knowledge.

There are two major groups of blood-vessel tumours, viz. angiomatous malformations, and neoplasms made up of blood-vessel elements and springing from vascular tissues (angioblastomas). On histological grounds the former can be identified by the invariable presence of neural elements between the vascular formations. They are classifiable as capillary (telangiectatic), venous, and arteriovenous, are mainly superficial in distribution, and none are easy to deal with surgically. The latter class, rarely associated with external manifestations such as nævi, are found with regularity in the cerebellum, seem to be practically unknown elsewhere, and vary from a cystic to a solid type. Histologically they are separable from meningiomas and other tumour groups by the existence of a reticular network within them.

This model monograph is complete with illustrations, index, and bibliography.

Report on the Poliomyelitis Epidemic in Manitoba, 1928. Published for the Department of Health and Public Welfare by the Great West Life Assurance Company, Winnipeg. 1929. Pp. 83.

AN epidemic of poliomyelitis occurred in Winnipeg and Manitoba from July to November, 1928. Some 435 cases were reported, with 37 deaths (about 8.5 per cent.). Much the most interesting and practically important part of this publication deals with the preparation and distribution of convalescent serum and the investigations of its action, and it ought to be studied and pondered over by those to whom poliomyelitis is a concern. By advertisement in public prints a large number of donors were traced and secured; each was paid at the rate of $5 for 50 c.c. of blood, or less, and $10 for quantities between 50 and 100 c.c. In a specially examined group of 161 patients, 17 died, 54 were left with residual paralysis, and 90 made a complete recovery. Serum was administered to 74 of these cases in the pre-paralytic stage, with the result that none died and only five exhibited subsequent palsy. This is a striking comment on the efficacy of convalescent serum at that stage, for where it was not given till after the onset of paralysis the ratios of death and residual sequelæ were distinctly high. As for spread of infection, the Report declares that "it is reasonable to consider as a distinct possibility transmission of the disease from individual to individual in some way at present not definitely known."

Revision de la Doctrine des Localisations Cérébrales. By R. Brugia. Paris: Masson et Cie., 1929. Pp. 190. Price 24 fr.

For some time not a few neurologists have been sceptical of the existence of any schematic anatomical localization of function within the cerebral cortex. The inconstancy and transient nature of paralysis following purely cortical lesions of the motor area have supported in some measure this attitude of doubt. Prof. Brugia goes further, and denies altogether any localization of function—not only in the cortex, but in the cerebrum as a whole. His thesis affirms that within the nervous system there are no centres concerned with the collection of stimuli, their transformation into impulses, the genesis of new energies or the coordination of results directed towards a final purpose. For him "the cortex possesses no static imprints of reality." Pierre Marie has written a refreshing introduction to this iconoclastic monograph, recommending it as a challenge to a mass of facts and theories, much of which is probably accepted without question. Brugia's contribution may thus assist in orientating our data as to the existence of specialized cortical areas possessing peculiar functional significance.

M. C.

Contributions to Psychiatry, Neurology and Sociology, dedicated to the late Sir Frederick Mott. Edited for the Mott Memorial Committee by J. R. Lord, C.B.E., M.D. London: H. K. Lewis & Co. 1929. Pp. 401. Price 21s. net.

The volume of papers written by various pupils, associates and friends of the late Sir Frederick Mott and dedicated to his memory comprises a fine series of original contributions of all kinds—anatomical, pathological, psychological, psychotherapeutic, sociological, even phonological—bearing witness to the wide-ranging interests of a man whose loss is still deplored. Their titles cannot here be reproduced, nor any special comment made on their nature and value. Numbering some 30 in all, they form an impressive collection which every one who knew Sir Frederick Mott or came in contact with him should seek to possess. We are conscious as we turn these pages of a sense of deep regret that such an offering was not made while he was still with us. For some reason or other the *Festschrift* idea has never made much appeal in England, but they do these things far better abroad. Our post-mortem kindness is poor compared with the compliment our affection and respect might have paid him by the presentation during life of such a thesaurus as this.

Diseases of the Nervous System. By S. E. Jelliffe, M.D., and W. A. White, M.D. Fifth edition. With 489 illustrations, including 13 plates. London: H. K. Lewis & Co. 1929. Pp. 1174. Price 2 gns. net.

The fourth edition of this textbook was reviewed at some length in this Journal (Vol. IV, p. 287). The present edition is slightly larger, and has been subjected

to rigorous revision and, in some places, considerable modification. In view of the fact that it embraces both neurology and psychiatry the authors have accomplished a difficult task in presenting so much in a handy-sized volume which is not too heavy for comfortable reading. It makes more of an appeal to the beginner in neurology and psychiatry and to the intelligent practitioner than to the expert, notwithstanding the erudition of its writers and the many useful references to the literature, seeing that rarities are sometimes overlooked and the latest developments sometimes insufficiently defined. Vaccination encephalitis should be annotated, and the neural complications of exanthems and specific fevers. Myelitis and spinal abscess are not described from the clinician's viewpoint in adequate detail, nor is vascular disease of the cord—the authors' descriptions are more topographical than nosological and etiological. Schilder's encephalitis and its cognate states also deserve attention. For the limits of the work it is however excellently done, has long been the recipient of appreciation, and can once more be commended for its all-round high level of accomplishment.

A Textbook of Clinical Neurology. By ISRAEL S. WECHSLER, M.D., Associate Professor of Clinical Neurology, Columbia University, New York, etc. Philadelphia and London: W. B. Saunders Company. 1928. Pp. 725. Price 32s. 6d. net.

THIS new textbook of clincal neurology belies its title to some extent, seeing that it embodies in reality a system of nervous diseases organic and functional, with good if succinct descriptions of a neuropathological kind and with sufficient neurophysiological details to render semiology interesting and understandable. Under the headings 'Spinal Cord,' 'Peripheral Nerves,' 'Brain,' and 'The Neuroses,' an effort is made to cover the field of neurology from a clinical viewpoint; less attention is paid to disease-entities than to syndromes and yet where possible the former are delineated and a pathological basis adopted for purposes of classification. All this, in our opinion, is well done, while good illustrations and a certain number of bibliographical references add to the merits of the work. The present-day advances in neurology are represented by a modern outlook as regards 'The Epilepsies' and 'The Neuroses,' for example; and rarities, on the other hand, are not dismissed too curtly. For the beginner in neurological studies and for the busy practitioner this volume is well calculated to appeal mainly by reason of its relative brevity and descriptive clearness.

Introductory Lectures on Psycho-analysis. By SIGMUND FREUD. Authorized English translation by JOAN RIVIERE. With a preface by ERNEST JONES, M.D. Second and revised edition. London: George Allen & Unwin, 1929. Pp. 395. Price 16s.

THIS, the authentic 'textbook' of psychoanalysis, was reviewed in our pages on two previous occasions (Vol. I, p. 304, Vol. III, p. 307). The present

edition, but little modified, contains and embodies the teaching of Professor Freud in regard to three main subjects, viz., the psychopathology of everyday life, dreams, and neuroses. As everyone knows, it is with precisely these three topics, utilised for research, that the author made his attack on academic psychology and his contribution to psychotherapeusis. Whatever developments have since arisen (and they are many), psychoanalysis as a system is based on Freudian theories of dream and neurosis. Here is his corpus doctrinæ and here his gospel. Clothed in a garb of smooth English, it commends itself to people of intelligence because of the simplicity of the language, and to the professional man because of its sincerity.

How to Stain the Nervous System : a Laboratory Handbook for Students and Technicians. By J. ANDERSON, head laboratory assistant at the National Hospital for Diseases of the Nervous System, Queen Square, London. With an introduction by J. G. GREENFIELD, M.D., F.R.C.P., Pathologist to the National Hospital, Queen Square. Edinburgh : E. & S. Livingstone. 1929. Pp. 139. Price 5s. net.

MR. ANDERSON'S vademecum of staining methods for histological study of the nervous system is just the right size ; it is neither too scrappy to irritate by omissions nor too bulky and elaborate for convenience. Those who have worked in neuropathological laboratories themselves will at once appreciate the completely practical nature of this compilation of technique ; it abounds with little 'tips' gathered from experience and calculated to smooth the way to technical excellence. Further, as we scan its pages we meet on occasion with expressions of personal opinion that can have emanated only from one who possesses an enthusiasm for his subject and who has tried to make it interesting. This slender volume is of rather limited appeal, as is natural, but all who use it will value it.

Handbuch der Biologischen Arbeitsmethoden. Edited by Geh. Med.-Rat. Prof. Dr. EMIL ABDERHALDEN. Sections 263 (price Mk. 8) and 285 (price Mk. 10). Berlin and Vienna : Urban and Schwarzenberg, 1928 and 1929.

RECENT contributions in this encyclopædia of methodology, devoted to the physiology of nerve and muscle, include an excellent résumé of present-day knowledge of chronaxy by Dr. Henri Laugier of Paris, translated into German by Dr. Nellmann of Tübingen. It is highly technical but clearly written and appropriately illustrated. Dr. Spiegel's article on the measurement of tonus, equally technical, nevertheless contains not a little of clinical value, applicable to bedside examination. That by Dr. Martin Kochmann on the investigation of smooth-muscle organs is of greater interest to the professional physiologist, as are those by Dr. Erich Schilf on the determination of the latent period in muscle and by Dr. Nikolaus Bernstein on kymocyclographic registration. Dr. Wilhelm Steinhausen deals with the elastic properties of muscle and the theoretical bases on which their study is founded.

Reflexmechanismus spastischer Lähmungen. By Dr. O. Leibowitz, Bad Homburg. Heidelberg: Dr. H. Grossberger. 1928. Pp. 40. Price Mk. 2.

A little book on the reflex phenomena associated with spastic paralysis contains nothing that is really new or novel, although what is known is well set forth and on the whole fairly representative of present views. Some attention is given to clinical differences between the reflectivity of upper and lower limbs, and to contrasts between flexor and extensor mechanisms.

Fortschritte der Sexualwissenschaft und Psychoanalyse. Edited by Dr. Wilhelm Stekel. Vol. III. Leipzig and Vienna: Franz Deuticke. 1928. Pp. 195. Price Mk. 12.

The new volume of this publication is described as a Festschrift in honour of the 60th birthday of Dr. Stekel and contains a number of different articles on psychopathological subjects. Those on depersonalisation by Dr. E. Gutheil and on kleptomania by Dr. Max Friedemann are of considerable interest. An astonishing case of fetishism is narrated by Dr. van Tricht. Several contributions come from Dr. Stekel himself.

Understanding Human Nature. By Alfred Adler. Translated by W. Beran Wolfe. London: George Allen & Unwin, Ltd., 1928. Pp. 286. Price 12s. 6d. net.

This volume is based upon a year's lectures delivered at the People's Institute in Vienna. The contents are divided into two parts, the first part dealing with human behaviour and the second with the science of character. The author's views are already widely known. Here his individual psychology is presented in a somewhat popular and very readable form. He endeavours to show that all human psychic phenomena are subject on the one hand to the rule of communal life, and on the other are influenced by individual striving for power and superiority. Specific character traits are in no way hereditary, but arise in the course of mental development, and lead in a unit direction to the goal which is constantly present, more or less consciously, for everyone. Vanity and ambition are specially stressed as affects which, when exaggerated, are at the root of much disorderly individual development and stunting of the social feeling.

Dr. Adler has made highly valuable contributions to the understanding of human nature, but one cannot help feeling that it is more complex than he makes out and cannot adequately be explained from any one particular angle only. Having started out with his definite concept, it seems as though, somehow or other, everything is made to fit it. At times in his illustrative cases this strikes us as only too apparent. There is a good deal of redundancy in the book, but that is perhaps hardly a fault when the subject is directed to a wide

public. We can, at any rate, conclude that these pages make stimulating and suggestive reading. The author's enthusiasm and sincerity are highly persuasive and no student of human nature can afford to neglect his interesting views. C. S. R.

Recueil de Travaux offert à Edouard Flatau. Edited by a Committee. Warsaw: Sklad Glowny u Gebethnera i Wolffa, 1929. Pp. 888.

As a token of appreciation and gratitude on the completion of 35 years of scientific teaching and research this volume is dedicated to the distinguished neurologist Professor Edward Flatau by a number of colleagues and friends, Polish and otherwise. Nearly all the contributions are written in that language, but some are in French or German, and three in English. Numbering 68 in all, they include many of considerable originality and value, and form a useful addition to a neurological library.

Lectures in Psychiatry : The Major Psychoses. By WILLIAM A. WHITE. Nervous and Mental Disease Monograph Series. No. 51. Nervous and Mental Disease Publishing Company: New York and Washington, 1928. Pp. 167. Price $3.00.

THERE is no authority who can deal with psychiatry more lucidly and interestingly than Dr. William White. These twelve lectures to medical students who are on the threshold of the study of mental medicine are a model of how the subject-matter should be presented. The logical order in which the material is given is satisfying to the mind. Its contents are ideally set forth for the budding student and should prove useful to any reader who desires a rational concept of the psychoses. C. S. R.

Aids to Psychology. By JOHN H. EWEN. 1929. London: Baillière, Tindall and Cox, 1929. Pp. 163. Price 3s. 6d. net.

THIS small volume is an addition to the well-known "Students' Aids Series." The aim of the book is to offer a means of rapid revision following a study of the larger textbooks on the subject, and to emphasize those points useful to students studying for a diploma in psychological medicine. Though psychology does not easily lend itself to such treatment, the writer has well fulfilled these objects. We might draw attention to faults of omission and commission, but considering the difficulty of such a compilation it is perhaps surprising that there are not more. Delusions are not mentioned, nor is the psychopathology of hallucinations referred to. It is nevertheless a useful addition to the series. C. S. R.

The Clinical Examination of the Nervous System. By G. H. MONRAD-KROHN, M.D., Professor of Medicine in the Royal Frederick University, Oslo. Fourth edition. London: H. K. Lewis, 1928. Pp. 209. Price 7s. 6d. net.

THE fourth edition of this well-known handbook contains no new matter beyond a brief chapter on the interpretation of X-ray photographs of the skull. In spite of many competitors in the same field it continues to hold its place as an introductory guide to the study of clinical neurology and for this purpose we can warmly recommend it.